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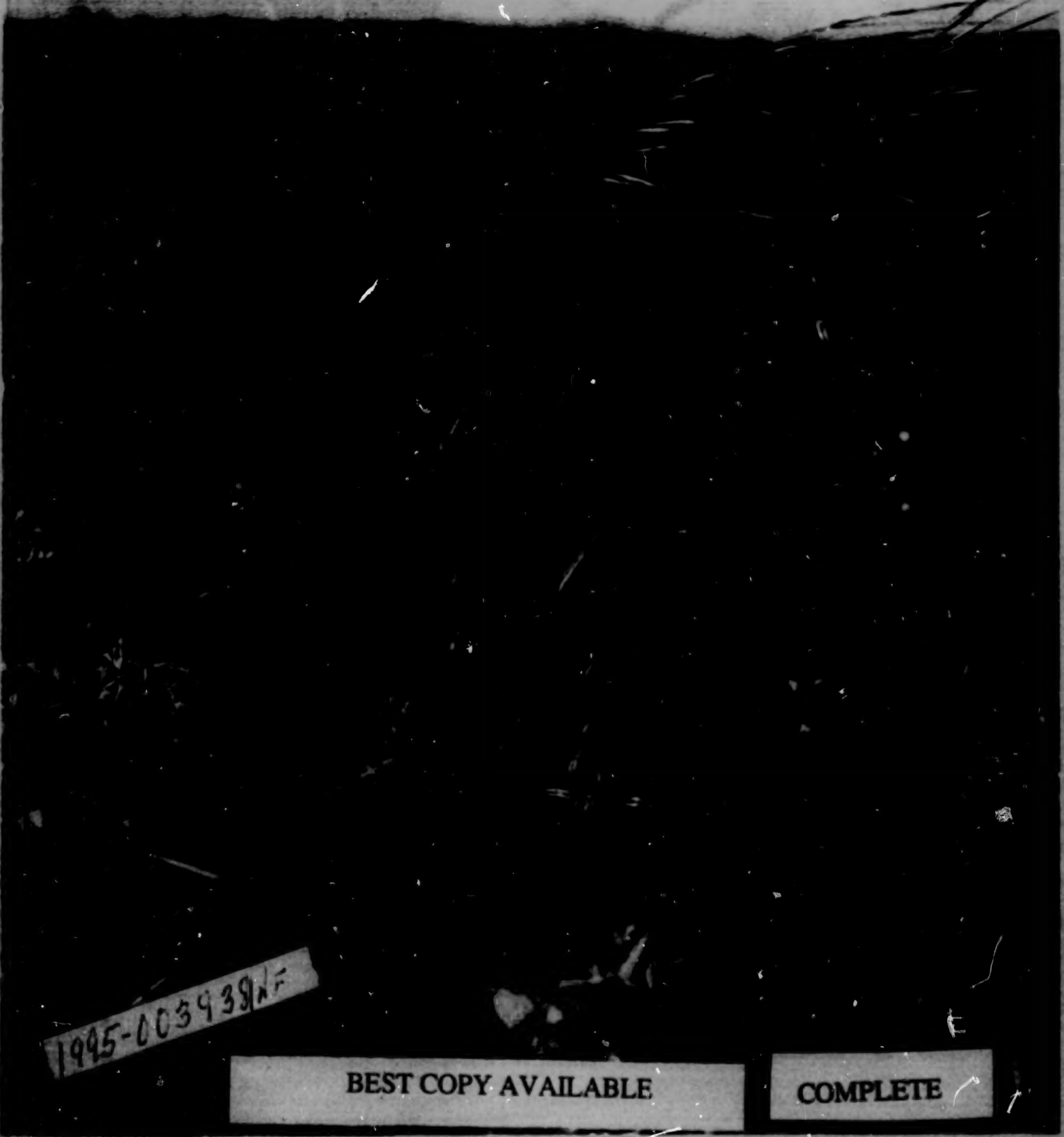
Tewaukon

National Wildlife Refuge

Comprehensive Conservation Plan



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Tewaukon
National Wildlife Refuge

Comprehensive Conservation Plan

September 2000

Prepared by
U.S. Fish and Wildlife Service
Tewaukon National Wildlife Refuge
9754 143 1/2 Avenue Southeast
Cayuga, ND 58013-9764

Approved: ______________________ Date: 9/27/00
[illegible] Regional Director, Region 6, Denver, Colorado

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Tewaukon National Wildlife Refuge
Comprehensive Conservation Plan Approval
U.S. Fish and Wildlife Service, Region 6

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Sept 25, 2000
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Summary

The U.S. Fish and Wildlife Service (Service) is the principal Federal agency with the responsibility for conserving, protecting, and enhancing fish and wildlife and their habitats. The Service manages a diverse network of more than 500 national wildlife refuges. The National Wildlife Refuge System which encompasses more than 92 million acres of public land and water, and provides habitat for more than 5,000 species of birds, mammals, fish, and insects.

The Tewaukon National Wildlife Refuge Complex (Complex) includes the Tewaukon National Wildlife Refuge (NWR) and the Tewaukon Wetland Management District (WMD). The Refuge is composed of the Tewaukon and Sprague Lake Units (8,363 acres) and two easement refuges (Storm Lake and Wild Rice). The WMD includes 14,000 acres of Waterfowl Production Areas (WPAs), 35,000 acres of wetland easements and over 10,000 acres of grassland easements in Ransom, Richland, and Sargent Counties, North Dakota. The lands were acquired for the primary purpose of supporting migratory birds and other wildlife. The Complex is located on the gently rolling glacial till plain of the Prairie Pothole Region and the Red River of the North Valley (original bed of glacial Lake Agassiz). Birds from both the Central and Mississippi Flyways use Complex habitat. Over 243 bird species have been recorded in the area. Of these species, 100 are known to nest in the area, and the remainder can be seen during spring and fall migrations. Many other reptile, amphibian, mammal, and invertebrate wildlife species live on Tewaukon Complex lands.

The Complex has four key wildlife and habitat values: 1) wetlands provide important migration and breeding habitat for waterfowl and other waterbirds, and habitat for several species associated with wetlands including leopard frogs, painted turtles, mink, muskrats, and invertebrates; 2) tallgrass prairie remnants provide some of the last remaining habitat for nesting and migrating grassland birds, rare prairie butterflies, and other prairie wildlife; 3) other grassland habitat provides winter cover for resident species and breeding habitat for ground nesting birds and other grassland wildlife; 4) riparian habitat that provides breeding and migration areas for many species of birds and mammals. The Tewaukon Complex also provides unique and important values for people. Wildlife, habitat, scenery, recreation, and cultural history all combine to make the Complex a national treasure.

Comprehensive Conservation Plans (CCP) were mandated by the National Wildlife Refuge System Improvement Act of 1997. This Act requires that the CCP must identify and describe 1) purposes of the Complex; 2) fish, wildlife, and plant populations and their habitats; 3) archaeological and cultural values; 4) significant fish, wildlife and plant problems; and 5) the actions necessary to correct them. The CCP should also identify and describe compatible wildlife-dependent recreational opportunities and administrative and visitor facilities.

Benefits of the CCP are several: better long-term continuity in Complex management; better understanding of Complex management actions for Complex staff members and visitors; a clear description of future development and funding needs; and the assurance that Complex management will fulfill the mission of the National Wildlife Refuge System and the specific purposes for which the Complex was established.

The Tewaukon CCP will be used to prepare step-down management plans and revise existing plans. It also will be used to prepare budgets which describe specific actions to be taken by the Complex over the next 15 years. Given that new information, guidance and technology frequently change and become available, the CCP will be updated as necessary throughout the 15-year period.

The Environmental Assessment considered three management alternatives for management of the Tewaukon Complex. Each of the alternatives were evaluated for environmental consequences in accordance with the National Environmental Policy Act (NEPA). The CCP is the preferred alternative.

Vision: Tewaukon National Wildlife Refuge Complex will be preserved, managed, and enhanced as a part of the tallgrass prairie wetland ecosystem capable of supporting migratory birds and other native wildlife and plants for the benefit of present and future generations. The Complex will provide an environment where a diversity of native tallgrass prairie, wetlands, plants, wildlife, and their natural processes can be observed and explored. It will provide a place where people can learn about wildlife and their habitats and enjoy wildlife-dependent recreation.

The management focus of the CCP is summarized by five major Complex goals that are supported by a series of objectives and implementation strategies. These goals include:

Habitat: Preserve, restore, and enhance the ecological diversity of native flora, other grasslands and wetlands within the tallgrass prairie wetland ecosystem.

Wildlife: Preserve, restore, and enhance the ecological diversity and abundance of migratory birds and other native wildlife with emphasis on waterfowl, grassland, and wetland-dependent birds.

Endangered Species:
Contribute to the preservation and restoration of endangered, threatened, rare, and unique flora and fauna that occur, or have historically occurred, in the area of the Complex.

Public Use/Recreation and Environmental Education:
Provide recreational and educational opportunities for persons of all abilities to learn about and enjoy the tallgrass prairie wetland ecosystem, the fish and wildlife found there, and the history of the Complex in a safe and compatible manner.

Partnerships:
Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive prairie/wetland ecosystem in which the Tewaukon Complex plays a key role.

The achievement of these goals will result in the following major accomplishments in the Complex over the next 15 years (includes implementation of Drift Prairie Project, North American Wetlands Conservation Act Grant, and the Dakota Tallgrass Prairie Project):

Habitat:

- Protection of the remaining tracts of tallgrass prairie in the District with grassland easements, cooperative agreements or fee title acquisition (approximately 60,000 acres).
- Enhancement of 3,716 acres of existing native prairie areas on Complex lands by reducing nonnative plants and increasing the abundance and the number of native plant species.
- Management of the vegetative structure and species composition on other grasslands on the Complex to provide for the needs of grassland nesting birds.
- Restoration of 1,000 acres of old dense nesting cover (DNC), invasive nonnative grasses, and crop fields to a diverse native plant community on Complex lands.
- Enhancement of 38 managed Refuge wetlands to mimic natural drawdown cycles and reduce nonnative wetland plants. Improve the water quality in Wild Rice River as it enters the Refuge by restoring wetlands and adding vegetative buffer strips.
- Protection of wetlands on private land through fee title, easements or cooperative agreements.
- Enhancement of wetlands by implementing low impact (minimum till) agricultural practices on surrounding uplands, grazing systems, repairing water management structures, and placing waterfowl nesting structures on private land.
- Restoration and creation of wetlands on private land.

Wildlife:

- Improvement of waterfowl nesting success on the Refuge and six high priority Waterfowl Production Areas.
- Maintenance of 135 acres of cropland on the Refuge as food for migratory birds and resident wildlife.
- Reduction of detrimental nonnative wildlife (carp, feral dogs and cats, house sparrows) on the Complex through habitat management and direct removal.
- Minimize wildlife disturbance by the public by limiting access at certain times of the year and by activity.

Cultural Resources:

- Gather more information on the cultural resources on the Complex. Provide additional interpretation and protection of these cultural resources.

Public Use/Recreation and Environmental Education:

- Maintain a recreational fishing program in Lake Tewaukon and Sprague Lake by reducing carp and by continuing to manage the two lakes as open water migratory bird rest areas.
- Continue to provide public opportunity for hunting of white-tailed deer and pheasants on the Refuge and wildlife observation and photography with limited access.
- Expand the Refuge visitor center, including exhibits. Expand the hours the visitor center is open to the public.
- Improvement of the Complex outreach program through new brochures, a website, displays, and signs.
- Continue to provide environmental education programs and activities.

Partnerships:

- Continue to work with existing partners on habitat management, enhancement, and protection programs; recreational programs; and environmental education activities.
- Create opportunities for new partnerships to assist in implementing the CCP.
- Foster a volunteer program on the Complex.

Song Sparrow
by Keith Pranski

White Lady's Slipper
by Keith Pranski

Blue-eyed Grass
by Keith Pranski

Silver Scurfpea
by Keith Pranski

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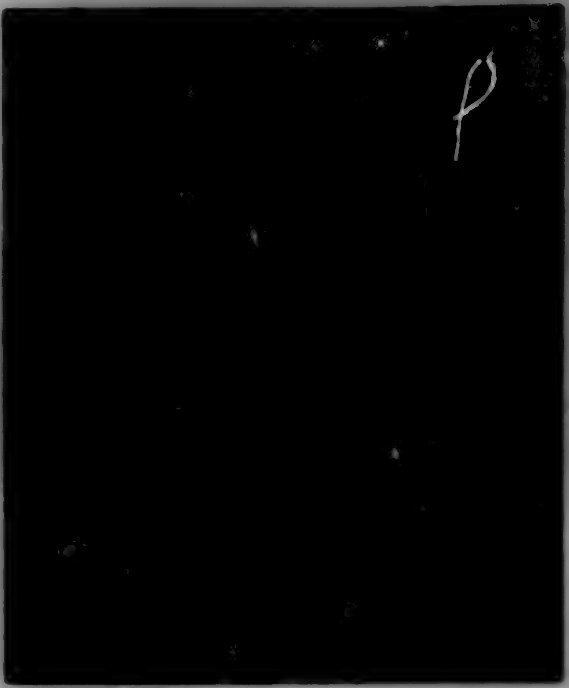
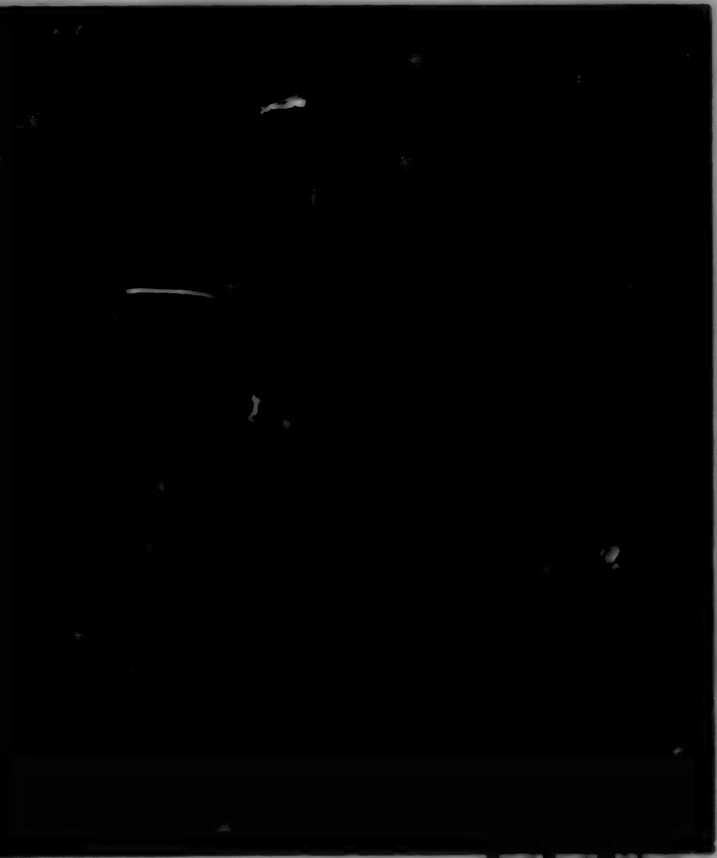
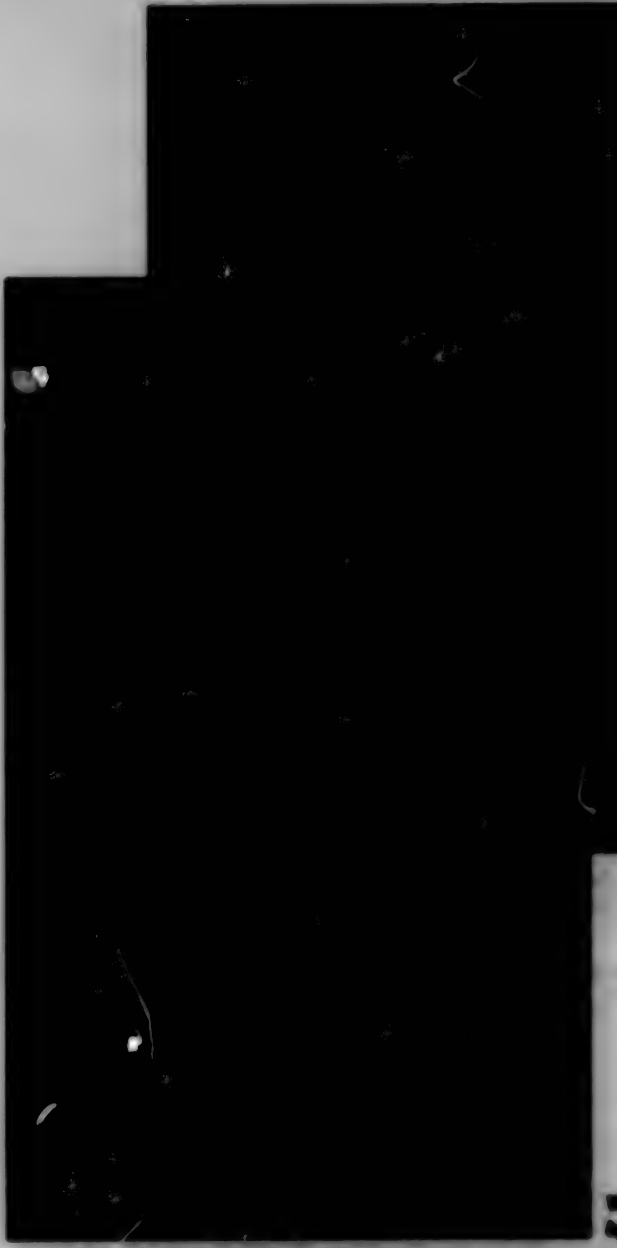
Monarch Butterfly on Rough Blazing Star by Keith [illegible]



Painted Lady Butterfly on common sunflower by Keith [illegible]



Great Egret Chicks on Pool 7A Nesting Colony by Keith [illegible]



Western Prairie Fringed Orchid by Keith [illegible]

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Introduction and Background

Background

The Tewaukon National Wildlife Refuge Complex (Complex) is located in the southeast corner of North Dakota (See Map 1). The Complex includes the Tewaukon National Wildlife Refuge (Tewaukon and Sprague Lake Units), the Storm Lake Easement Refuge, the Wild Rice Easement Refuge, and the Tewaukon Wetland Management District (see Map 2). The Refuge is 8,363 acres in size and is located in Sargent County. On June 28, 1945, Public Land Order 295 established the area known as the Tewaukon NWR as "... a refuge and breeding ground for migratory birds and other wildlife..." The Tewaukon Wetland Management District (WMD) was established in 1960 as a management unit for migratory birds. The Wetland Management District encompasses tracts in Sargent, Ransom, and Richland Counties. The District is comprised of Waterfowl Production Areas (fee title), wetland easements, and grassland easements in Ransom, Richland, and Sargent counties. The Tewaukon Complex staff administers over 14,000 acres of WPAs, over 25,000 acres protected by wetland easements, and over 10,000 acres of grassland easements.

The Complex provides important habitat for migrating and breeding waterfowl, other water birds, grassland birds, and other migratory birds. Lands in the Complex also provide critical habitat for a variety of wetland and prairie mammals, reptiles, amphibians, and invertebrates. The Complex is a valuable area for recreation including hunting, fishing, and wildlife observation. The Refuge also has a long and rich cultural history. All of these factors make the Tewaukon Complex a national treasure.

Purpose and Need for Comprehensive Conservation Plan

The U.S. Fish and Wildlife Service (Service) is the principal Federal agency with the responsibility for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages a diverse network of more than 520 National Wildlife Refuges. This National Wildlife Refuge System encompasses more than 92 million acres of public land and water, and provides habitat for more than 5,000 species of birds, mammals, fish, and insects.

Comprehensive Conservation Plans (CCPs) were mandated by the National Wildlife Refuge System Improvement Act of 1997. The Refuge Improvement Act requires that all lands and waters of the National Wildlife Refuge System be managed in accordance with an approved Comprehensive Conservation Plan. This Act requires the identification and description of 1) Complex purpose(s); 2) fish, wildlife, and plant populations and their habitats; 3) archaeological and cultural values; 4) significant fish, wildlife, and plant problems; and 5) the actions necessary to correct them. The Plan should also identify and describe opportunities for compatible wildlife-dependent recreational uses and administrative and visitor facilities.

The CCP describes long-term Complex management actions and purposes of the actions for Refuge staff and the public, in order to provide Complex management continuity. As the CCP was developed, public input regarding Complex issues and management was considered. The CCP is a description of the wildlife and habitat protection, management, and development that is needed for Complex purposes to be achieved. Funding and personnel needed to achieve the CCP are also described. Completing the work described in the CCP will accomplish Complex purposes and contribute to the mission of the Refuge System and the U.S. Fish and Wildlife Service.

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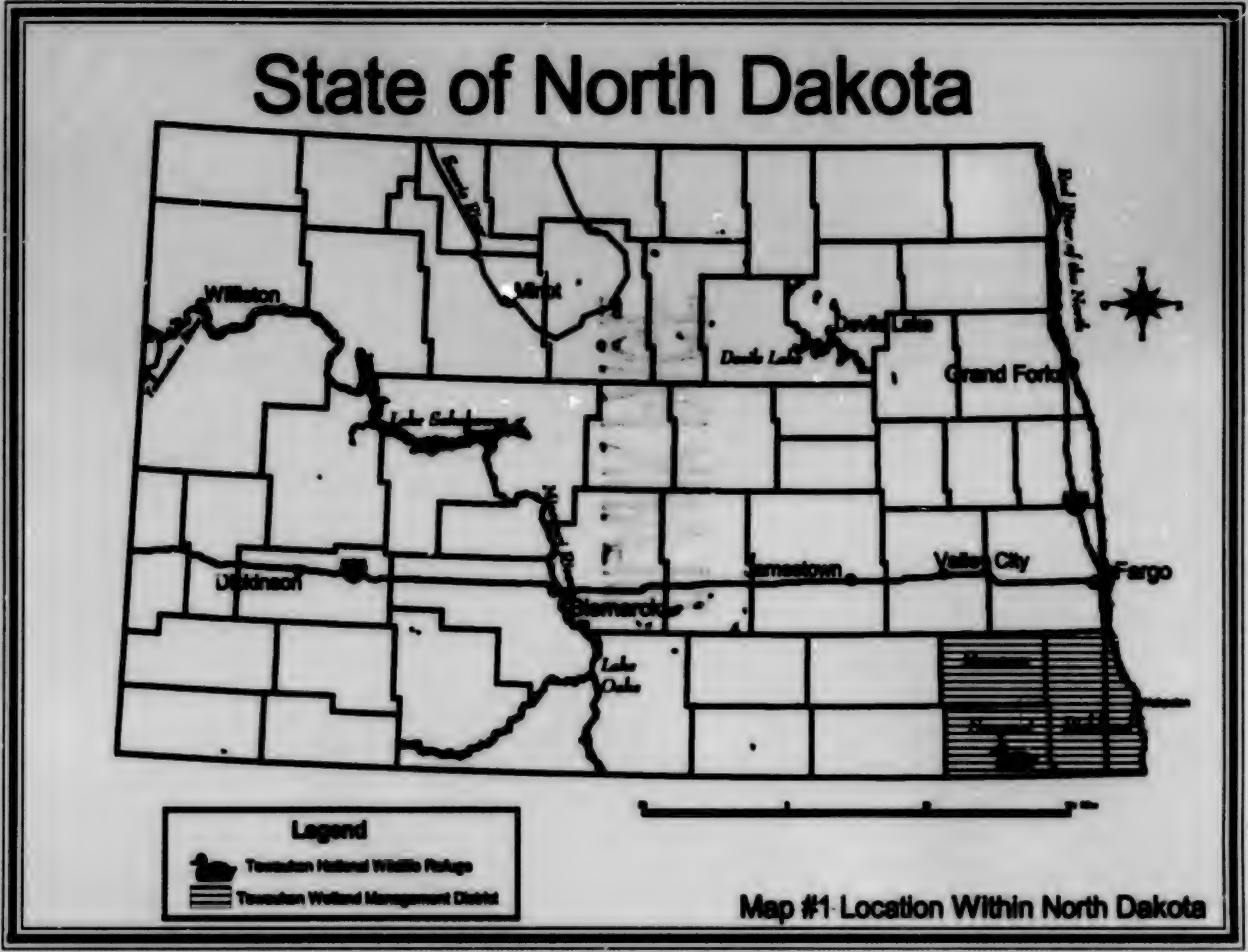

Map #1 Location Within North Dakota

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Description of Planning Process

NEPA - National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 stipulates that a written assessment must be made of any action proposed by an agency of the Federal Government that significantly affects the quality of the human environment. NEPA also requires Federal decision makers to study, develop, and describe appropriate alternatives to recommended courses of action and solicit the views of other Federal and State agencies and the public early in the decision making process. An Environmental Assessment (EA) was prepared to accompany the Draft CCP. The proposed action (preferred alternative) identified in the EA is the CCP (enhanced management alternative). A Finding of No Significant Impact and Environmental Action Memorandum are located in Appendix F.

Tewaukon Complex Comprehensive Conservation Plan Process

The Tewaukon National Wildlife Refuge Complex CCP is guided by the established purpose of the Refuge and Wetland Management District; the Service and National Wildlife Refuge System missions; Service compatibility standards; and other Service policies, plans and laws related to Complex management.

Planning is the process of deciding in advance what you are going to do. The Plan is the vehicle used to let others know in advance what you're going to do.

While developing the CCP, the planning team reviewed conservation planning efforts of the following groups: Partners in Flight, Western Hemisphere Shorebird Reserve Network, North American Waterfowl Management Plan Committee, U.S. Forest Service, ND Game and Fish Department, and Service Mainstem Missouri Eco-team (Appendix H).

This CCP establishes the goals, objectives, and strategies for Complex management. Listed below is an outline of the planning process used to develop the Tewaukon Complex CCP:

1. Preplanning (forming a planning team, identifying available people and funds, organizing efforts)
2. Identify Issues and Develop Vision - **Public Input Gathered on Issues**
3. Gather Information on Resources and Legal Responsibilities
4. Analyze Resource Relationships (Develop Goals and Objectives)
5. Develop Range of Alternatives
6. Assess Environmental Effects
7. Identify Preferred Alternative
8. Publish Draft Plan - **Public Comments on Draft Plan Gathered**
9. Respond to Comments
10. Adopt Plan
11. Implement Plan, Monitor/Evaluate Actions, Review and Revise

As with any process, comprehensive conservation planning is not necessarily linear or sequential, but can involve moving back and forth between steps.

Compatibility Determinations

Compatibility determinations are required by the Refuge Improvement Act for any program or activity occurring on Refuge System lands. The planning team reviewed previously completed compatibility determinations regarding Complex programs and reevaluated these determinations to ensure they were relevant and current. Compatibility determinations document the evaluation of Complex programs and activities by the Refuge Manager. In a compatibility determination, a program or activity is judged to be compatible or incompatible with Complex purposes. No current program or activity on the Complex was determined to be incompatible as a result of this review. Even if uses are determined to be compatible, the Refuge Manager must also evaluate whether adequate staff and funding are available to support the program or activity. Compatibility determinations can be found in Appendix G.

Involving the Public

This planning effort will provide local communities, national, State, and Tribal organizations, and interested individuals an opportunity to have a voice concerning the future direction of the Complex. The primary thrust for the planning process is to provide a forum for ideas and issues to be shared, reviewed and evaluated. It is also important for the Service to provide information to the public throughout the process.

Since the Tewaukon Complex includes three Counties and many people visit the Complex from Fargo and Wahpeton, it was decided to hold open houses in several locations to gather public input. A list of the open houses held are as follows:

Sargent County	Forman City Hall (March 12, 1998)
Ransom County	Lisbon High School (March 17, 1998)
Richland County	American Legion Hankinson (March 24, 1998) Wahpeton Law Enforcement Center (March 26, 1998)
Cass County (Fargo)	ND State University Memorial Union (April 2, 1998)

A total of 103 people attended the four open houses.

The open houses provided participants an opportunity to learn about the Fish and Wildlife Service's and National Wildlife Refuge System's mission and goals and the Refuge and District purposes and current management issues. People attending were provided the chance to speak with Service representatives and to share their comments and concerns about current management. Attendees were also asked to suggest ways they would like to see Complex management change.

Prior to the public meetings, the Complex staff discussed the planning process with local County commissioners, sportsmen's groups, other interested groups, and advertised in the local media. Information on the planning process was also displayed in cafes and businesses frequented by community members in the three Counties comprising the Complex. A questionnaire on Refuge issues was provided to the public to stimulate additional public input for the planning process.

After the Draft CCP was published, a question and answer Open House was held to gather input and comments. The comment period was extended an additional 30 days during which staff met with a variety of area groups and organizations on the Draft CCP.

Issues Raised During the Planning Process

The Tewaukon Complex staff received a variety of input from the meetings, questionnaires, and verbal discussions. The majority of the public input dealt with public use and recreation issues. Most of the local input dealt with very specific issues. Refuge users were interested in expanded fishing hours, more year-round access, and fishing in more Refuge wetlands. Expanding Refuge hunting opportunities to include waterfowl and predators, and modification of existing hunting seasons (i.e., shortening the pheasant season) were other recreation issues brought up by the public. Habitat issues identified by the public included expanding or decreasing the acres of cropland and conducting more management (such as planting more shelterbelts for winter cover and food plots) for pheasants and deer on the Complex. Grassland habitat and management issues included more protection for grasslands, integrating more grazing into management, maintaining and increasing weed control efforts, and reducing grassland habitat fragmentation. Crop damage on private lands by Canada geese was an issue raised throughout the District. Issues involving land acquisition and subsequent loss of local tax revenue were also raised. The planning team identified many of the same issues raised by the public. Some additional issues that the planning team raised included the decline, protection, and management of wetland habitat, tallgrass prairie and associated wildlife.

The Tewaukon CCP is designed to address broad management and wildlife issues. Because public input is an important part of the CCP process and the CCP does not always address specific comments, public input is discussed in Appendix P.

Putting It All Together

> *Without healthy and diverse habitat, there is no wildlife.*
> - Fulfilling the Promise (1999)

Specific habitat management is the end product of this planning process. For example, Refuge habitat management actions such as weed control, farming, or water management should logically step-down from the broad Refuge System mission statement to the purposes the Refuge was established for, to the Refuge Vision statement. The links identified in the CCP planning process that step-down from the Refuge Vision to a habitat management action are established by setting habitat goals, quantifying the goals into objectives, and identifying a series of strategies that can be used to achieve the objectives. The strategies (specific habitat management) applied must be evaluated to determine if the objectives are being met. If the objectives are met, then the goals and vision should also be met.

Complex goals and objectives are presented separately for the Refuge, District, and Easement Refuges for ease of understanding and reference. They are, however, not independent of each other. Goals and objectives for all of the management units must be considered when conducting management actions and programs. The Complex is a part of an ecosystem where actions in one area may affect other wildlife and plant species and their habitats. These relationships were considered when the goals and objectives for each unit were developed.

Habitat goals and objectives are the primary criteria which refuge managers will use to guide and evaluate their efforts. The Monitoring and Evaluation Section of the Plan addresses how this will be accomplished. Providing the habitat components that are needed to support Complex wildlife species is the focus of this plan. Habitat objectives are linked to wildlife objectives and strategies. Without healthy and diverse habitat, wildlife will not exist. Goals and objectives for wildlife, endangered and threatened species, and interpretation and recreation provide additional information for managers to refine specific actions and to assist in evaluating success of habitat management and use of the Complex by the public. In order for refuge managers to fully achieve the visions that have been developed for the Complex, these objectives should be viewed holistically and applied collectively. All objectives in this plan are for 15 years unless otherwise stated in the objective.

Some strategies may not be effective and some will take a long time to evaluate. For example, an objective may be to eliminate the noxious weed leafy spurge using a variety of strategies such as chemical application and biological control. Refuge managers recognize that the objective of eliminating all leafy spurge is not possible since new infestations can start in small areas of soil disturbances. Current tools may also have limitations and may only slow the spread of leafy spurge or reduce the size of the infestation. The CCP is flexible. It allows for new strategies to be implemented as new methods become available and when existing strategies are not effective ways to meet the objective. Important things to keep in mind are other factors that influence outcomes besides management activities. These factors, which include animal impacts, wildfires, weather, funding and staffing, influence the effectiveness of strategies and their outcomes.

The CCP, which describes specific actions to be taken by the Complex staff over the next 15 years, will be used to prepare step-down management plans, revise existing plans, and budgets. Step-down management plans give more specific information on the appropriate use of management tools to achieve goals and objectives. Given that new information, techniques, and technology frequently arise, the CCP will be updated as necessary.

U.S. Fish and Wildlife Service Mission and Goals

The Mission of the Service is "working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." The goals of the Service are aimed at fulfilling this mission. Some of the Service goals are: 1) sustaining fish and wildlife populations including migratory birds, endangered species, anadromous fish, and marine mammals; 2) conserving a network of lands and waters including the National Wildlife Refuge System; 3) providing Americans opportunity to understand and participate in the conservation and use of fish and wildlife resources.

National Wildlife Refuge System Mission and Goals

The Mission of the National Wildlife Refuge System is to "administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (1997 National Wildlife Refuge System Improvement Act). Goals of the System are to: 1) preserve, restore, and enhance threatened and endangered species in their natural ecosystems; 2) perpetuate the migratory bird resource; 3) preserve a natural diversity and abundance of refuge flora and fauna; 4) provide the public an understanding and appreciation of fish and wildlife ecology; 5) provide visitors with wildlife-dependent recreation.

Mallards, Cindie Brunner

National wildlife refuges are guided by the mission and goals of the Service and National Wildlife Refuge System, the designated purpose of the Refuge unit as described in the establishing legislation and/or executive orders, Service laws and policy, and international treaties (for a complete list see Appendix E). Individual refuges provide specific habitat requirements that support trust resource species including migratory birds, endangered species, marine mammals, and anadromous fish. For example, waterfowl breeding refuges in South and North Dakota provide important wetland and grassland habitat that supports populations of waterfowl as authorized by the Migratory Bird Conservation Act and the North American Waterfowl Management Plan. The Tewaukon Complex supports breeding populations of waterfowl and provides migration habitat during spring and fall periods. Sabine NWR and other refuges in Louisiana and Texas provide wintering habitat for waterfowl populations. This network (system) of refuge lands is critical to the survival of these birds. Any deficiency in one location affects the species and the entire system's ability to maintain self-sustaining populations.

Legislative history recognizes the importance of providing for wildlife oriented recreation for people on national wildlife refuges. The Refuge Recreation Act of 1962 (16 USC 460k-460k-4) provided guidance for the Service to provide wildlife oriented recreational opportunities for the public if they were compatible with the primary purposes of the refuge. Funds must also be available for the development, operation, and maintenance of recreational programs. In the National Wildlife Refuge System Improvement Act of 1997, six wildlife-dependent recreational uses are recognized as priority public uses of refuge lands. These include wildlife observation and photography, environmental education and interpretation, and fishing and hunting. Priority public uses, and other uses, can be allowed on refuges if they are compatible with the purpose of the refuge and funding is available to support them. Uses may be allowed through a special regulation process, individual special use permits, and sometimes through State fishing and hunting regulations.

Complex and Resource Descriptions

Tewaukon Complex History

The Tewaukon National Wildlife Refuge Complex is located in the southeast corner of North Dakota (See Map 2). The Complex includes the Tewaukon NWR and the Tewaukon Wetland Management District (WMD). The Refuge is composed of the Tewaukon and Sprague Lake Units. The WMD includes Waterfowl Production Areas and wetland and grassland easements and two easement refuges. It is located on the gently rolling glacial till plain in the Prairie Pothole Region and the Red River of the North Valley (original bed of ancient glacial Lake Agassiz). It hosts birds from both the Central and Mississippi Flyways (See Figure 1 and 2). More than 243 bird species have been recorded in the area. Of these species, 100 are known to nest in the area and the remainder can be seen during spring and fall migrations when peak numbers occur.

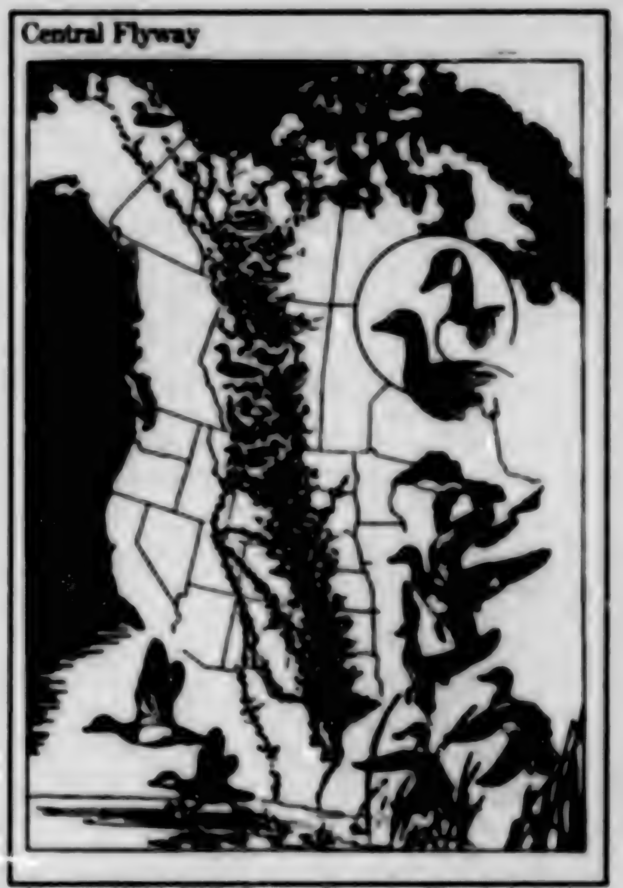

Figure 1. USDI, FWS. Flyways, Pioneering Waterfowl Management in North America. 1984, 517 pgs.

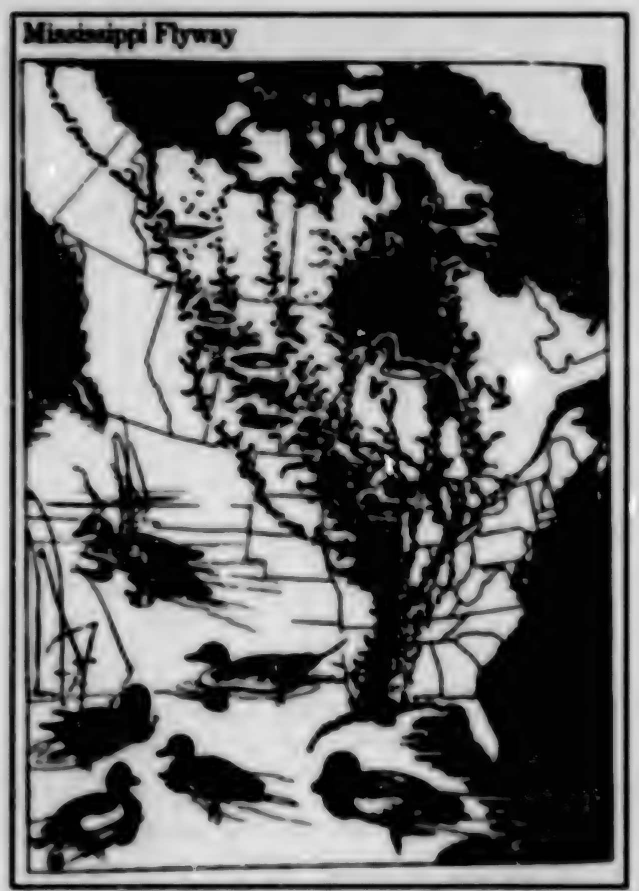

Figure 2. USDI, FWS. Flyways, Pioneering Waterfowl Management in North America. 1984, 517 pgs.

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Tewaukon National Wildlife Refuge

Land around Lake Tewaukon has been a part of the U.S. Fish and Wildlife Service's National Wildlife Refuge System since 1934. An Easement Refuge was established on November 26, 1934 by Executive Order 6910, which provided for acquisition of easements for flowage and refuge purposes and filing of water rights. At that time, the Government's goal was to provide jobs for the unemployed and conserve water and wildlife resources. As part of Franklin Roosevelt's "New Deal," the Work Progress Administration worked with local landowners to purchase refuge easements which reserved the right to impound water (to maintain water areas during drought), maintain no hunting areas for migratory birds, and serve as wildlife conservation demonstration areas. Though these were perpetual easements, the land remained in private ownership. The construction of dams in these areas provided employment for workers and developed additional water resources. Water rights for the additional impounded water were also applied for from the State of North Dakota during this time. The easement refuges where water rights were applied for included Lake Tewaukon, Hepi Lake, Lake Elsie, Storm Lake, and Wild Rice Refuges. One fee title piece of 80 acres along the Wild Rice River west of the current headquarters was purchased in 1936 and used for temporary housing and storage. The area was managed from the Sand Lake National Wildlife Refuge located 80 miles to the southwest of Tewaukon just north of Aberdeen, South Dakota.

The Tewaukon easement lands were reserved and purchased as a Government-owned Refuge with the encouragement and support of local landowners and sportsmens groups. These landowners and groups wanted to protect the area for wildlife and to continue recreational fisheries improvements. On June 26, 1945, Public Land Order 286 established Tewaukon Refuge as "... a refuge and breeding ground for migratory birds and other wildlife...." In 1946, 512 acres were purchased in fee title around Lake Tewaukon. Since that original Refuge purchase, additional lands have been acquired totaling 8,363 acres. In March of 1956, Sand Lake NWR turned over management of the area to an on-site staff (one refuge manager) in a headquarters located five miles south of Cayuga, North Dakota.

Original management objectives established in the Master Plan for the Refuge in October 1962 included: "Primary objectives (1) to provide optimum nesting habitat for ducks; (2) to provide protection and food for fall and spring concentrations of migrant ducks and geese, primarily the smaller races of Canada geese, and snow and blue geese. Secondary objectives are (1) to maintain balanced population of all resident wildlife species; (2) to provide for public observation of wildlife species in their natural environment; (3) to provide limited day-use recreation including public hunting, where and when such activities are compatible with primary management objectives of the refuge."

The Tewaukon area has a rich historical background. Prior to settlement by Europeans, this area was inhabited by several plains nomadic tribes that were primarily hunter-gatherers. They utilized the area around Lake Tewaukon including the lake's peninsula extensively. In 1867, the Government established the Lake Traverse Dakotah Sioux Reservation for the Sissetonwan and Wahpetonwan Dakota peoples. The boundaries included a portion of the Lake Tewaukon area. This area continued to be used for gatherings by Native Americans and white settlers. This lake is still a popular spot today, especially for sightseeing, wildlife observation, hunting, and recreational fishing.

Tewaukon Wetland Management District

The Tewaukon Wetland Management District was established in 1960 to administer a variety of Service property interests in Richland, Ransom, and Sargent Counties. Enabling legislation includes: the Migratory Bird Hunting and Conservation Stamp Act (Stamp Act) and amendments; the Wetlands Loan Act and the Migratory Bird Conservation Act, for acquisition of areas for migratory birds and for Waterfowl Production Areas. Waterfowl Production Areas are subject to the provisions of the Migratory Bird Conservation Act "... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...." Public Law 85-585 amended the Stamp Act to remove the inviolate sanctuary provision from WPAs. This is further defined in the Code of Federal Regulations (CFR) 50 as areas open to hunting, trapping, and fishing.

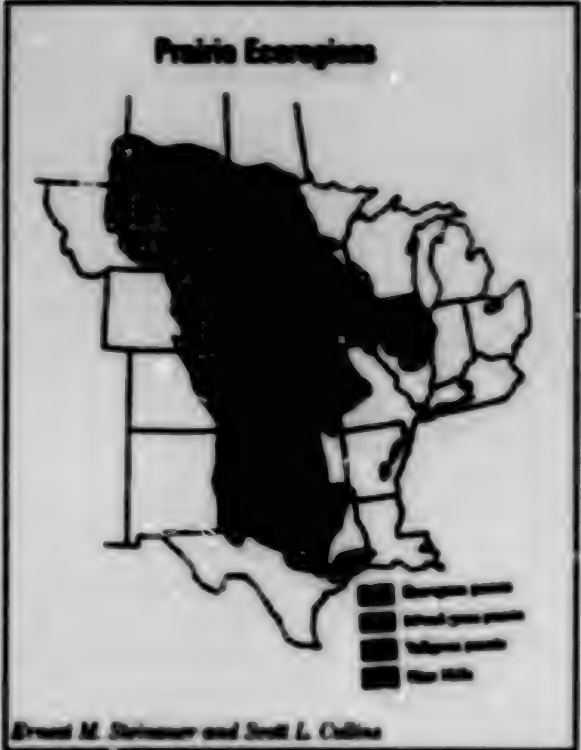
The Wetland District is comprised of Waterfowl Production Areas (fee title ownership), wetland easements, and grassland easements in Ransom, Richland, and Sargent Counties. Wetland easements and WPAs are purchased with Federal Duck Stamp dollars to protect migration and nesting areas for waterfowl. The Waterfowl Production Areas are fee title areas, from 20 to more than 1,000 acres in size, that provide migratory bird habitat. The Tewaukon Complex staff administers over 14,000 acres of these WPAs in the three Counties (See Map 2). Wetland easements have been purchased from willing landowners in the District over the past 30 years. In order to protect wetlands on described tracts from draining, filling, leveling, or burning, the Service has purchased a perpetual real property interest in them. District personnel are responsible for managing over 35,000 acres protected by wetland easements. In 1998, grassland easements were added to the District to protect prairie tracts from being converted to farmland. Grassland easements allow grazing at any time, and haying after July 15 to protect grasslands for wildlife habitat. To date, Complex personnel are responsible for administering over 10,000 acres of grassland easements.

Tewaukon Complex Easement Refuges

Easements were purchased on Lake Elsie, Wild Rice, and Storm Lake Refuges in 1934 as water and wildlife conservation projects. The Service divested Lake Elsie in 1998. The real property interest that the Service purchased in Wild Rice and Storm Lake Easement Refuges is limited, and is similar to the interest that was purchased on some of the tracts around Lake Tewaukon in the 1930s. On these three refuges, the Service purchased refuge easements which reserved the right to impound water, maintain no hunting areas for migratory birds, and serve as wildlife conservation demonstration areas.

Geographic/Ecosystem Setting

The majority of the Tewaukon Complex is located in the tallgrass prairie ecosystem while a portion of western Ransom and Sargent Counties lie in the mixed-grass ecosystem (See Figure 3). Of all the prairie types, the tallgrass prairie is the most mesic with annual precipitation averaging 20 inches for southeastern North Dakota. Extreme seasonal temperatures range from -31 degrees to 100 degrees Fahrenheit. The tallgrass prairie is characterized by grasses, some over five feet tall, including big bluestem, Indian grass, switchgrass, prairie cordgrass, and a variety of forbs including golden Alexander, Maximilian sunflower, blazing stars, and leadplant. The mixed-grass prairie is characterized by grasses and forbs ranging from two to four feet tall including needle-and-thread grass, sideoats grama, little bluestem, coneflowers, aromatic aster and golden rod. These plant communities are not separated by distinct boundaries but transition from tallgrass to mixed-grass in the western part of the District. This boundary transition depends primarily on precipitation. Tallgrass plant species are commonly found on wetter sites and mixed-grass species are often found on higher, drier sites. Sites that have less than a 10 foot difference in elevation can have very different plant communities. Soils are also different on these sites.

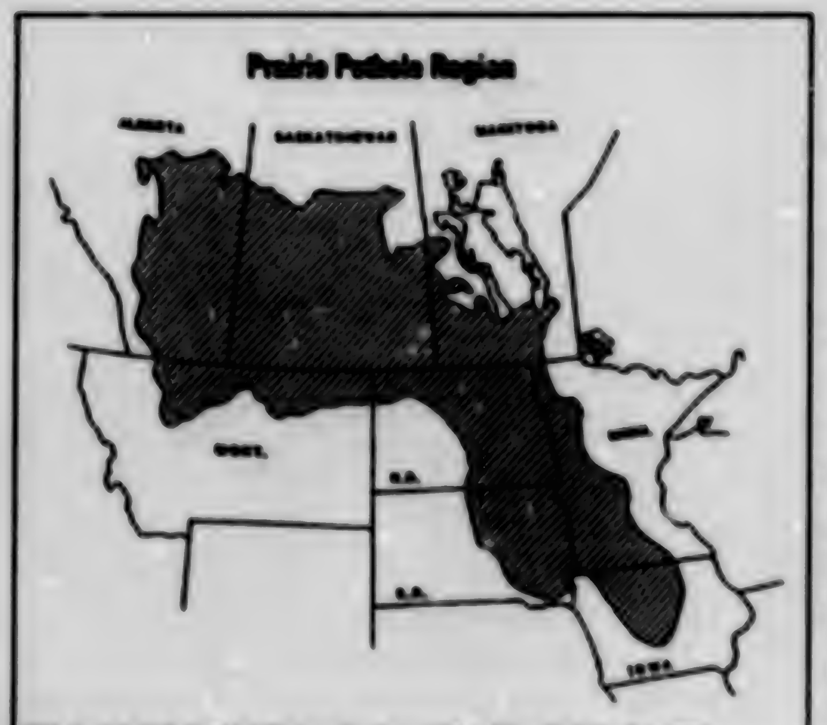


Ernest M. Steinauer and Scott L. Collins

Figure 3. Prairie Ecoregions

The Complex is also located in the Prairie Pothole Region (See Figure 4). The wetlands in this region are among the continent's most biologically productive systems. They provide habitat for waterfowl, shorebirds, wading birds, amphibians, and a variety of other wildlife. The wetlands are important for maintaining and recharging groundwater supplies, improving water quality, storing flood waters, and trapping of sediments. The prairie pothole wetland complexes and their associated grasslands are an integral component of the prairie landscape, providing a wide array of ecological, social, and economic benefits. (U.S. Prairie Pothole Joint Venture Implementation Plan Update 1995). The Complex lands are located in several river watersheds including the Sheyenne, Red River of the North, and the Wild Rice River (Map 3). The Wild Rice River, a western tributary of the Red River of the North, flows through the Refuge. The Wild Rice River and several unnamed tributaries provide a water source for Refuge managed wetlands that attract migratory waterfowl which rest, feed, and nest in the area.

The Tewaukon Complex is located on the eastern edge of the Central Migratory Bird Flyway and migrating birds are strongly influenced by the James River Corridor. Birds from the Mississippi Migratory Bird Flyway following the Lake Traverse-Minnesota River system also use the area. As a result, Tewaukon is a mixing point for birds associated with both the Central and Mississippi Flyways (See Figures 1 and 2).



U.S. Prairie Pothole Joint Venture Implementation Plan Update, Jan. 1995

Figure 4. Prairie Pothole Region

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Tewaukon National Wildlife Complex

Ransom, Richland, and Sargent Counties, North Dakota

Map #5 Tewaukon Complex Watershed Map

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Historical Resources, Cultural Values, and Uses

Four major glacial periods impacted the northern plains during the Pleistocene Age (Pielou 1992). The most recent was the Wisconsin glacial stage, which reached its maximum extent about 13 thousand years ago (Mayewski et al. 1981). All the dominant landscape features of the Prairie Pothole Region are products of that geological event including prairie wetlands or "potholes" and the rich glacial till soil that gave rise to the tallgrass prairie. The gently rolling landscape with shallow, seasonal, temporary, and permanent wetlands or potholes was carved out as the glaciers receded.

The tallgrass prairie was once an estimated 190 million acres (Bailey 1995) and stretched from southern Texas to southern Manitoba (See Figure 3) and was the dominant vegetation type across the eastern portion of the Great Plains during pre-settlement times (Steinauer and Collins 1996). Shallow, seasonal temporary and permanent wetlands dotted the grassy plain. Most of the original tallgrass prairie was plowed for agricultural production shortly after European settlement. The Service's Habitat and Population Evaluation Team (HAPET) office, through the use of land satellite imagery, currently estimates that 275,000 acres of tallgrass prairie remain in North Dakota, a 99 percent loss. In the Tewaukon District, 118,700 acres are estimated to remain.

The Complex area has a rich history of use by prehistoric man. Three periods of occupation have been documented through archaeological excavation at the Refuge. The three main cultures described in the area include the Plains Archaic (5500-500 B.C.), Plains Woodland (500 B.C. - A.D. 1000), and Plains Village (A.D. 1000 - 1780). Evidence indicates that the cultures using this area had an equestrian nomadic life style (Jackson and Toom 1999) which focused on subsistence big game hunting (especially bison) and the gathering of wild fruits and plants (Haberman 1978). Fish and bird (probably waterfowl) remains have been found in limited quantities in archaeological sites. Fruits and plants utilized included chokecherry, plum, and hawthorn (Haberman 1978), prairie turnip (a food staple), Jerusalem artichoke, Indian potato, wild onion, arrow leaf, pond lily, wild raspberry, and wild strawberry (Gilmore 1977, Weaver 1954). It is believed that eventually some of these cultures grew or traded for corn, squash, and beans as they became less nomadic.

Land Use and Wildlife Species Changes

Prior to the migration of European settlers, the Complex area was used by nomadic tribes primarily for subsistence. They consumed large ungulates (bison and elk), birds, and plants. Very little farming took place, and the majority of the grassland remained intact. As European settlers moved into southeastern North Dakota, farming was introduced and the highly productive cropping potential of the soils was discovered. Production crops in the area include wheat and barley, corn and soybeans. Sugar beets are planted in the rich Red River Valley. In more recent years, other crops have been introduced including sunflowers, canola, and higher cash yield crops that require irrigation such as potatoes and dry edible beans. Currently, the majority of the land in the District capable of producing a crop is farmed. The Conservation Reserve Program (CRP) administered by the U.S. Department of Agriculture has had a tremendous affect on the landscape for grassland birds. Cropland is enrolled in the CRP and is planted to grassland cover. Annual payments are made to the landowner for a period of 10 years. As of January 2000, over 144,000 acres of CRP grassland have been planted in the Tewaukon District. A few areas of native prairie still remain primarily due to poorer soil quality and cattle or buffalo are raised on these sites. See Map 4 for existing land cover types for the three Counties (Ransom, Sargent, and Richland).

> *"The ground was covered (with bison) at every point of the compass, as far as the eye could reach, and every animal was in motion."*
>
> - Alexander Henry 1801; Explorer along the Red River Valley

With the advent of European settlement, many of the grassland dependent wildlife species that historically used the area were either pushed out, hunted to extinction or severely reduced. Some of these grassland species included: bison, elk, mule deer, antelope, grizzly bear, wolf, coyote, and sharp-tailed grouse (Bailey 1926).

Originally, trees were found in the prairie but were located only along natural rivers and lakes. As more trees were planted for windbreaks, and other sheltered spots such as culverts, abandoned buildings, and rock piles increased on the landscape, species of wildlife not previously found in the area, or found in limited numbers, increased. Red-tailed hawks, great horned owls, raccoons, woodchucks, striped skunks, white-tailed deer, and red fox populations increased in response to agricultural and settlement conversion. White-tailed deer are rarely mentioned by early explorers in the Red River Valley region (Bailey 1926) but are numerous today. Several species were introduced (either by natural events or by humans) from other countries and have spread to North Dakota or were directly released. These introduced species include house sparrows, ring-necked pheasants, gray partridge, carp, cattle egrets, and pigeons (rock doves). Giant Canada geese were originally found in the area but were hunted to extinction. They were reintroduced in the 1970s and are now found in record numbers.

Management by Unit

The planning team spent considerable time describing the variety of habitats on the Complex Units (Refuge, District, Easement Refuges) in order to explain the management actions needed to meet Complex goals. Each of the Management Units are presented to provide a logical step-down from the broad purpose and vision statements to management decisions. The CCP represents a course of action felt to best meet Complex goals and objectives. Implementation of the CCP will depend on increased staffing and funding. For more information on funding, staffing, and implementation of the Plan, see the Implementation and Monitoring Section.

Management of the Tewaukon National Wildlife Refuge and the Tewaukon Wetland Management District is conducted out of the Refuge headquarters. General information on the Complex will be discussed jointly, and the Refuge and District specific information will be discussed in detail in their management sections.

Special Management Units

The Tewaukon National Wildlife Refuge and Waterfowl Production Areas are insufficient in size and have a history of intense management and human impacts; for these reasons, they are not eligible to be included in the National Wilderness Preservation System. The Wild Rice River which flows through the Refuge has a history of human impacts and intense manipulation including Refuge impoundments, making it ineligible for a Wild and Scenic River Designation. Only two small areas in the Complex meet the criteria for a Research Natural Area designation. These two areas are on the Hartleben WPA and meet the criteria as an example of an important or significant habitat type (wet tallgrass prairie). The Service may consider this designation on these two sites in the future.

Tewaukon National Wildlife Refuge (See Map 5 and 6)

Purpose

Authorizing legislation for the Refuge initiated land acquisition and defined the Refuge purposes.

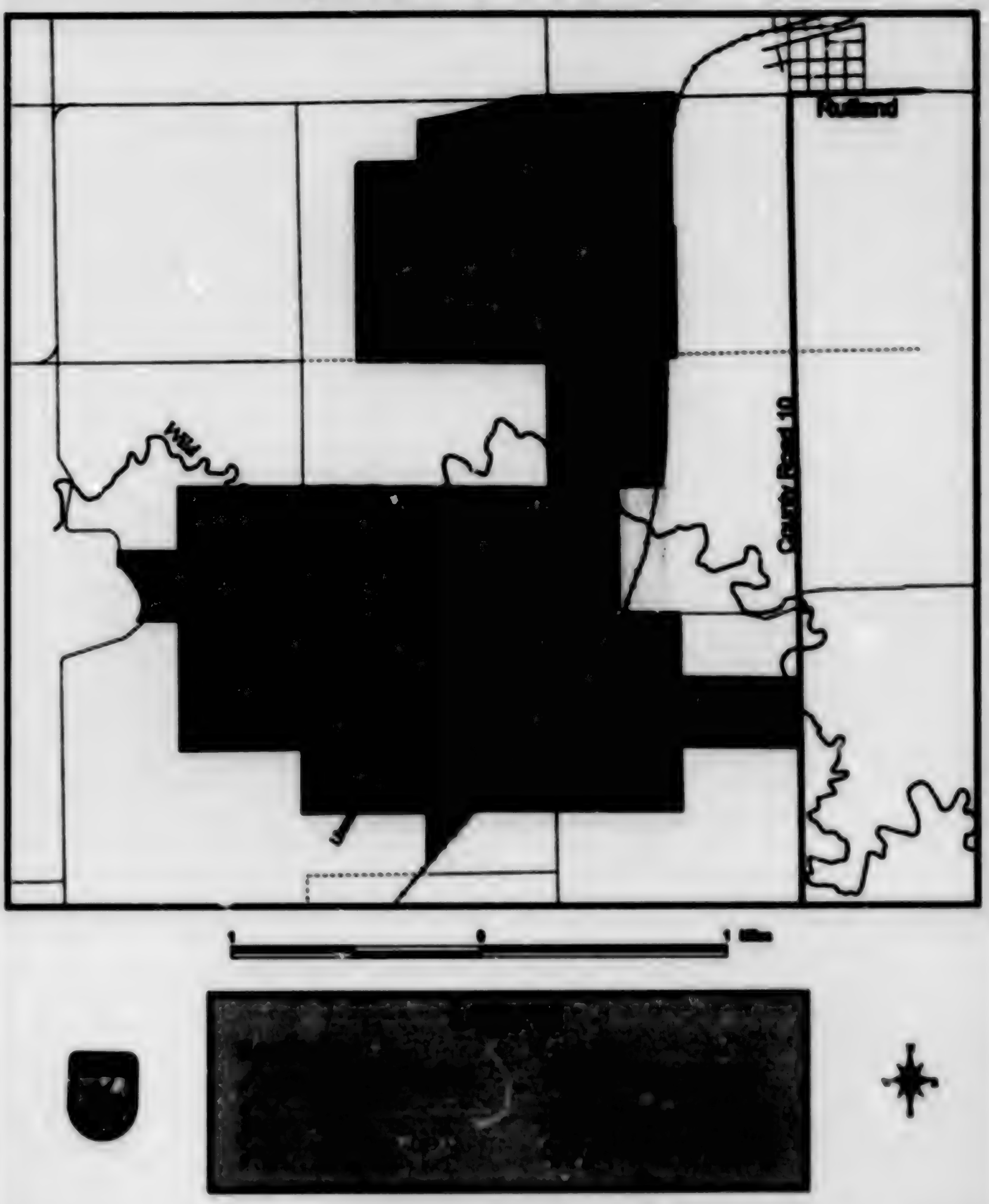
- For Refuge lands acquired under the Executive Order 9337, dated April 24, 1943, the purpose of the acquisition is to reserve and set apart certain public lands for the use of the Department of the Interior.
- For Refuge lands acquired under Public Land Order 286, dated June 26, 1945, the purpose of the acquisition is ...as a refuge and breeding ground for migratory birds and other wildlife....
- For Refuge lands acquired under the Migratory Bird Conservation Act, 16 U.S.C. § 715d, as amended, the purpose of acquisition is ... for uses as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. § 715d (Migratory Bird Conservation Act).

As part of the planning process, the Complex staff and planning team reviewed past national, regional, and Complex planning documents and current planning guidance. Using the legislation and plans, the planning team developed the following vision statement for the Refuge:

Vision: Tewaukon National Wildlife Refuge will be preserved, managed, and enhanced as a part of the tallgrass prairie wetland ecosystem capable of supporting migratory birds and other native wildlife and plants for the benefit of present and future generations. The Refuge will provide an environment where a diversity of native tallgrass prairie, wetlands, plants, wildlife, and their natural processes can be discovered and explored. It will provide a place where people can learn about wildlife and their habitats and enjoy wildlife-dependent recreation.

Sprague Lake Unit

Sargent County, North Dakota



Map #6 Refuge Map - Sprague Lake Unit

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Habitat Management

Wildlife species are intimately tied to the landscape. The food, water, shelter, and space that are provided on Refuge lands determine what wildlife species use those lands. Diverse habitats support diverse wildlife populations.

R1 Goal: **Preserve, restore, and enhance the ecological diversity of native flora, other grasslands and wetlands within the tallgrass prairie ecosystem.**

> *"The Herbage of this Plain in general [sic] rich and luxuriant consisting chiefly of strong and succulent grass of many varieties. In the season of flowers a very large portion of this great plain presents one continual carpet of soft verdure, enriched by flowers of every tint."*
>
> - General Sibley, 1863 on an expedition through North Dakota

Grasslands

Native Prairie

The tallgrass prairie was once an estimated 190 million acres (Bailey 1926) and stretched from southern Texas to southern Manitoba (Figure 3). Tallgrass prairie was the dominant vegetation type across the eastern portion of the Great Plains during pre-settlement times (Steinauer and Collins 1996).

The tallgrass prairie ecosystem had frequent disturbances. Wildfires, caused by natural events like lightning strikes, burned the prairie at a frequency that varied widely but was estimated to be every two to five years (Axelrod 1985, Bragg 1982, Bragg and Hulbert 1976). Lightning was the primary cause of these wildfires and would have been most common in mid-summer (Bragg 1982). Fires that were set intentionally or accidentally by Native Americans increased the frequency of fire (Pyne 1994). Bison, elk, mule deer, and a few white-tailed deer made up the larger herbivores. Pocket gophers, ground squirrels, and insects (ants, grasshoppers) made up the smaller herbivores (Bailey 1926). Large periodic climatic events including drought, hail, tornados, and flooding also shaped plant communities.

All these forces, wet periods, dry periods, herbivory, and fire shaped the tallgrass prairie into a complex and diverse floral ecosystem. The plant species composition of the tallgrass prairie was dominated by warm season native grasses such as big bluestem, switchgrass, Indian grass intermixed with little bluestem, sideoats grama, blue grama, and prairie cordgrass. Common cool season grasses included western wheatgrass, porcupine grass, needle-and-thread, June grass, and green needlegrass. Wildflowers were plentiful and bloomed from early spring into late fall. The early spring color of blue-eyed grass and white lady's slipper orchid turned to the orange of the prairie lily and white of the meadow anemone of early summer. Late summer brought on a dazzling display of purple blazing stars, and purple prairie clover and gave way in the early fall to the bright yellow of Maximilian sunflower, sneezeweed, and the delicate white petals of nodding ladies tresses. The sea of grass, as the prairie was described by some early travelers, was frequently interrupted by a large number of wetlands (120-160 basins/square mile) in a variety of sizes and depths. The plants associated with the wetlands added to the vegetative diversity of the tallgrass prairie. Woody species such as American elm, red elm, white ash, box elder, willow, bur oak, chokecherry, and buffaloberry were limited to stream and river corridors and some wetter areas protected from disturbance (Bailey 1926). As many as 300 species of plants were thought to be components of this ecosystem.

The present plant community classification used by the North Dakota Natural Heritage Program is a refinement of Heidel's (1986) Classification. The following types of plant communities of the tallgrass prairie ecosystem are described by indicator species in Heidel's 1986 Classification. These indicator species will provide guidance to refuge managers on existing prairie health and a measure for prairie restoration success. Prairie remnants occur of all these plant community types represented on the Complex.

Blazing Star, Cindie Brunner

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Wet Prairie

This type is found in temporary wetlands, level low areas and in bands surrounding deeper wetlands. It is dominated by prairie and wetlands grasses and some sedges. Forbs may be moderately abundant to sparse. Dominant species may include prairie cordgrass, switchgrass, and northern reed grass. Forbs include Maximilian sunflower, prairie dogbane, and golden alexanders.

Wet Mesic Tallgrass Prairie, Sand

This type is found in wet to mesic soils. It may grade into wet prairie on wetter areas and mesic tallgrass prairie on drier areas. This prairie type is dominated by tall, warm-season grasses with forbs that are generally tall and showy. The sand subtype is subject to greater moisture extremes and may have lower a diversity of forbs. Common grass species include switchgrass, big bluestem, northern reedgrass, Baltic rush, and Indian grass. Forbs may include tall blazing star, wild lily, white camas, Maximilian sunflower, Canada anemone, and black-eyed Susan.

Mesic Tallgrass Prairie, Sand

These types are found on relatively level areas of sand, lacustrine deposits, or till. These types include tall grasses such as big bluestem and Indian grass in most occurrences. On drier sites, mid-height grasses, such as porcupine grass and little bluestem, increase in importance. The sand subtype may have prairie sandreed in moderate amounts. Forbs are usually diverse and may be abundant locally. Additional grasses may include switchgrass and prairie dropseed. Some common forbs include blazing star, leadplant, stiff goldenrod, hoary puccoon, showy milkweed, white prairie clover, and stiff sunflower.

Central Mesic Tallgrass Prairie

Found on level to rolling topography or lower river valley slopes. Less precipitation than mesic prairie in the eastern part of the State and may contain more mixed-grass prairie components. It includes tall grasses such as big bluestem and Indian grass in most occurrences. Mid-height grasses such as porcupine grass and little bluestem are also important. Forbs are usually diverse and may be abundant locally. Additional grasses may include porcupine grass, green needlegrass, and sideoats grama. Some common forbs include narrow-leaved blazing star, leadplant, stiff golden rod, hoary puccoon, showy milkweed, white prairie clover, and stiff sunflower.

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Dry Mesic Tallgrass Prairie

This type is dominated by mid-height grasses. It is found on rolling to rough topography with varying slopes. Soils are generally well-drained to excessively drained. The till subtype of this community is commonly found on sides and river valley slopes. Common grasses include little bluestem, porcupine grass, June grass, sideoats grama, and Indian grass. Prairie sandreed is common and sand bluestem is occasional on sand substrates. Forbs can be abundant and include narrow-leaved blazing star, yellow coneflower, stiff sunflower, alum root, purple coneflower, thimbleweed, prairie smoke, and pasture sage. Sub-shrubs are common and include leadplant, prairie wild rose, and buckbrush.

Mesic Mixed-Grass Prairie

This type occurs generally on glacial till of hillsides, slopes, and river valleys. Common grasses include: green needlegrass, bearded wheatgrass, western wheatgrass, and porcupine grass. Common forbs are similar to those in dry-mesic tallgrass and may include purple coneflower, alum root, stiff sunflower, narrow-leaved blazing star, and yellow coneflower. Shrubs and sub-shrubs include leadplant, prairie wild rose, and buckbrush.

The Refuge lies along the western edge of the tallgrass prairie ecosystem. Most of the Refuge was farmed prior to its establishment, and only 616 acres of native prairie remains. Most of the native prairie remaining on the Refuge can be categorized as Wet, Central, Dry Mesic Tallgrass, and Mesic Mixed-Grass Prairie types. Historically, only the very wet or lands inaccessible to farming remained uncropped. Management history of the sites included prescribed fire, used periodically in the 1970s to the present time and limited haying. Little to no grazing has occurred on these areas.

Native Prairie Management

Unlike most of the habitat management objectives described in this plan, the following objective was not fundamentally driven by wildlife needs. The planning team recognized that few remaining tracts of tallgrass prairie are within the area that historically occurred in this ecosystem. Some of these remaining tracts occur on Complex lands. These objectives recognize managing and maintaining this rare and unique habitat and assumes prairie associated wildlife will use these areas.

R1.1 Objective: Preserve, restore, and enhance the diverse native floral communities on 616 acres of the Refuge's existing native prairie so that greater than 75 percent of the plant community is composed of indicator species that are suitable for each site using Heidel's classification (Heidel 1986).

Strategies:

- ✓ Conduct floristic surveys on existing native prairie on the Refuge to establish baseline information on species composition to use for comparison following management techniques.
- ✓ Develop specific monitoring techniques to annually evaluate these native prairie areas in a step-down Monitoring Plan.
- ✓ Apply management tools (prescribed burning, mowing, grazing, interseeding, chemical treatment, etc.) as appropriate.

Tallgrass Prairie Management Approach

In an effort to develop a habitat-based approach to managing tallgrass prairie, U.S. Geological Survey and Refuge staff worked to develop management strategies that would guide grassland management on the Refuge and District. The strategies published as a report provide information to guide management efforts to maintain or restore native communities within the tallgrass prairie on the Tewaukon Complex. It was not feasible to provide information on all the species (plant and animal) that live in the tallgrass prairie ecosystem. This approach was chosen to manage for sensitive species (indicator species) because many of the environmental stresses are reflected in these species population levels. Indicator species that were chosen include four migratory grassland birds (upland sandpiper, grasshopper sparrow, northern harrier, and bobolink) and three rare prairie butterflies (Dakota skipper, regal fritillary, and poweshiek skipper).

The criteria used for selecting the bird species were:

- Select species that are associated with tallgrass or mixed/tallgrass prairie.
- Select species of management concern using lists from the Audubon Society Watchlist, Fish and Wildlife Service Nongame Migratory Birds of Management Concern List or North Dakota Species of Special Concern (Berkey et al. 1993).
- Select species for which the Complex is in the central part of the species' range, not on the periphery based on Breeding Bird Survey (BBS) maps, Grassland Bird Home page (Sauer et al. 1996), and North Dakota breeding bird maps (Stewart 1975).

Many species of invertebrates are excellent indicator species because their habitat needs are very restrictive (Erhardt and Thomas 1991). For example, some butterflies can only be found in high quality prairie habitat with specific plants for nectar and larval food resources including Dakota skipper and poweshiek skipper. Some invertebrates are also sensitive to local habitat changes (addition of roads, houses, wetland drainage, cropping of prairie) and processes including grazing and fire (Schlicht and Orwig 1998). For these reasons, three rare prairie butterflies (Dakota skipper, regal fritillary, and poweshiek skipper) were also added into the model. As more information and research is conducted on these three butterfly species, the model will be adapted to reflect any new or better information.

The following paragraphs are taken from "A Habitat-Based Approach to Management of Tallgrass Prairies" (Schroeder and Askerooth 2000).

> In tallgrass prairie habitats, grassland birds are of particular concern because they have exhibited steeper, more consistent declines during the past 25 years than any other group of North American birds (Knopf 1996). Conservation of native prairie birds and other wildlife depend on a variety of successional and diverse habitat conditions within a large block of grass (Skinner et al. 1984; Renken and Dinsmore 1987; Volkert 1992; Howe 1994; Madden 1996). Howe (1994) recommends management for tallgrass assemblages that are diverse, different from each other, and dynamic. Skinner et al. (1984) in a Missouri grassland study suggests that management should provide a wide range of grass cover heights during all seasons for the best wildlife habitat. Madden (1996) emphasizes the need to manage for all stages of prairie succession to provide for maximum grassland bird diversity over decades of management. The habitat affinities of grassland bird species are diverse, and species respond to similar conditions in different ways (Wiens 1969; Herkert 1994).
>
> The species richness of grassland birds is positively associated with the size of the grassland area and large prairies are important for the conservation of prairie bird populations (Herkert 1994). Herkert (1994) notes that both area and vegetation structure significantly affect grassland bird populations. Large areas that are uniform in plant composition and structure may have less value than several smaller areas with distinct and diverse vegetative components (Ryan 1986).

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> The most abundant introduced Eurasian grasses (i.e. Kentucky bluegrass and smooth brome) tend to be more uniform in height and density than native vegetation (Wilson and Belcher 1989).
>
> Several studies suggest that grassland birds are experiencing large population declines due to the loss of extensive areas of grasslands (Samson 1980, Herkert 1994, Vickery et al. 1994). The useable area for some grassland bird species is made smaller by the presence of trees in the grassland or adjacent to the grassland. The shape of the grassland area and its perimeter characteristics are as important to grassland birds as the size of the grassland area (Helzer and Jelinski 1999). Grassland birds that nested closer to wooded edges had higher predation rates on the birds and their nests and increased parasitism of their nests (Johnson and Temple 1986 and 1990, Burger et al. 1994). Some grassland species avoid nesting near patch edges (including adjacent trees, shelterbelts etc.) (Johnson and Temple 1986, Delisle 1995, Helzer 1996).

This research helped the planning team develop the next objective that addresses the management of contiguous blocks of grassland cover for the benefit of grassland nesting migratory birds and prairie butterflies. Six sites were chosen to implement our tallgrass prairie management approach (See Map 7). These sites were selected because they included tracts of native prairie, were in areas with minimal woody vegetation greater than one meter tall, and had access for management. Only one site (North Pool 2) has a tree row that may be removed after monitoring and site evaluation are done. Several of the sites have fields of tame grass, composed primarily of smooth brome, warm season native grass plantings, and a couple of crop fields. Two of the tracts are composed entirely of native prairie that have never been broken for crop production; the other sites have smaller tracts of native prairie. If this management approach proves to be an effective method of habitat management and if additional funds and staff become available, the management will be expanded to additional areas on the Refuge.

This objective recognizes that the establishing Refuge legislation describes setting lands aside as a breeding ground for migratory birds including grassland migratory birds. Under management, these prairie pieces should support a diversity of vegetation structure and flowering plants needed by prairie dependent butterflies.

R1.2 Objective: Manage the six Prairie Focus Areas (South Pool 4, Krause, North Pool 2, Southwest Sprague Lake, NE 1/4 Section 35, and Southeast of Railroad tracks - See Map 7): 1) to achieve an area of contiguous grassland (greater or equal to 160 acres) that is greater than 50 meters from woody vegetation (greater than one meter tall); 2) contain a variety of vegetative heights on the area with 20 percent in each of the following categories: 0 to 10 cm; 10 to 20 cm; 20 to 30 cm; 30 to 60 cm; greater than 60 cm; 3) to increase native floral diversity so that greater than 75 percent of the vegetative composition is composed of indicator species of the dry mesic tallgrass, central mesic tallgrass prairie, wet prairie, mesic tallgrass prairie climax communities (Heidel 1996).

Strategies:

- ✓ Provide the critical limiting habitat factors outlined in the "Habitat-Based Approach to Management of Tallgrass Prairie" (Schroeder and Askerooth 2000) for a variety of vegetative heights, and no woody vegetation greater than one meter tall on the six sites and 75 percent of vegetative composition composed of indicator species (Heidel 1996). Include specific management details of these areas in a step-down management plan.
- ✓ Develop a detailed Monitoring Plan for the six sites.
- ✓ Annually evaluate the vegetation using methods and techniques developed in the Monitoring Plan for the six sites and apply management tools (prescribed burning, mowing, grazing, interseeding, chemical treatment, etc.) as appropriate to provide the limiting habitat requirements for migratory grassland birds and rare butterflies.

30

Introduced/Planted Cover

Dense Nesting Cover

Dense nesting cover (DNC) is comprised of one to two species of wheatgrass, alfalfa, and sweet clover and planted to provide dense nesting habitat for ground nesting birds, especially waterfowl. Duebbert et al. (1981) reported that a minimum reading of two decimeters total visual obstruction is required in mid-April to provide the cover preferred by waterfowl for nesting in the Prairie Pothole Region. Thick cover helps conceal hen ducks from predators. DNC stands one, established, must receive management treatments every few years to maintain optimum quality (Duebbert et al. 1981).

The Refuge has approximately 1,348 acres of DNC. DNC is one of the primary grassland covers that Complex managers historically established on previously farmed uplands in order to provide nesting cover for migratory birds. DNC was primarily developed as a waterfowl nesting cover because of the international importance of the Prairie Pothole Region to nesting waterfowl. Haying has historically been the primary tool to rejuvenate DNC fields. Every 10 to 15 years the fields must be broken up and farmed for approximately three years to get rid of the smooth brome and Kentucky bluegrass that invaded them. These field are usually reseeded to DNC.

The planning team recognized that most of the grassland dependent birds that breed on the Refuge select nesting sites because of vegetative structure and composition that provides cover and food requirements. Introduced/ planted cover objectives were developed to try and ensure that vegetative cover on these sites remains attractive or is improved. Over a 15 year period, the staff thought that maintenance of 80 percent of existing DNC on the Refuge was an accomplishable objective.

R1.2 Objective: Maintain 80 percent of DNC fields with two decimeters visual observation obscurity to provide optimal nesting habitat for ground nesting ducks (mallards, teal, etc.) until the fields can be seeded back into native plant species.

Strategies:

- ✓ Annually monitor a selected sample of DNC fields on the Refuge for visual obscurity using the Robel pole method.
- ✓ Apply management tools (prescribed burning, haying, farming, grazing or interseeding) as appropriate to maintain optimal nesting habitat for ground nesting ducks.

Other Grasslands
The Refuge has approximately 739 acres of planted warm season native grass fields composed of three to four species including big bluestem, little bluestem, Indian grass, and switchgrass. Tewaukon nest records for the past nine years indicate that these stands do not attract nesting waterfowl because they are lacking vegetative structural diversity. The Refuge also has over 1,199 acres of introduced grasses consisting primarily of smooth brome and Kentucky bluegrass. These fields were generally planted to some other cover type, but have been invaded. If these fields are managed with fire and haying, they do provide marginal nesting cover for species like blue-winged teal but do not offer the structure preferred by many of the other ground nesting birds like bobolinks, mallards, and gadwalls. A total of 600 acres of planted cover would be converted to a diverse native floral community which involves intensive management. This acreage total includes sites in the six Prairie Focus Areas.

R1.4 Objective: Over the next 15 years convert 600 acres of planted cover (DNC, introduced grasses, and warm season native grass plantings) to a diverse native floral community composed of 75 percent of the climax species identified in Heidel's Classification (1986).

Strategies:
- ✓ Gather existing information and initiate research on native plant community restoration, interseeding techniques, chemical, and mechanical treatments.
- ✓ Develop site specific restoration plans, funding sources, and a Monitoring Plan; then begin restoration efforts. Apply management tools (prescribed burning, mowing, grazing, interseeding, chemical treatment, etc.) where appropriate.

Wetlands

> *"The entire face of the country is covered with these shallow lakes, ponds and puddles, many of which are, however, dry or undergoing a process of gradual drying out."*
> - Charles Froebel Traveled with General Alfred Sully's expedition in 1865 in Dakota Territory.

The Prairie Pothole Region encompasses a 300,000 square mile region (Figure 4) and includes 25 million wetlands of various types (U.S. Prairie Pothole Joint Venture Board 1995). In North Dakota, a great majority of these wetland basins are less than 15 acres (Stewart 1975). Wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin et al. 1979). Within a prairie wetland, water depth and duration of ponding determines the distribution of plant and wildlife species.

In the Classification of Wetlands and Deepwater Habitats of the United States by Cowardin et al. in 1979, wetlands are described by vegetation, water regimes (the length of time water occupies a specific area), and water chemistry. Description of prairie potholes are listed below.
- Temporary wetlands: a shallow depressional area which holds water from spring runoff, usually late May to early June. Temporary wetlands frequently reflood during heavy summer and fall rains. Characterized by smartweed, rushes, sedges, and grasses.
- Seasonal wetlands: a depression which holds water in normal years from spring runoff until mid-July to early August. Commonly refloods with frequent or heavy fall rains. Characterized by smartweed, rushes, sedges, and some cattails.
- Semipermanent wetlands: a well-defined depression which holds water in normal years throughout the summer. Generally only go dry in years below normal runoff and precipitation. Characterized by a predominance of cattail and bulrush vegetation with scattered open water areas.
- Permanent wetlands: a well defined basin which holds water throughout the year. Only go dry after successive years of below normal runoff and precipitation. Typically have a border of aquatic vegetation (usually cattails) and a large open water area in the middle.
- Fens, or alkaline bogs, are distinguished separately because they are saturated with water. They are dominated by grasses and sedges.

Prairie wetlands are dynamic in nature and go through various sequences or stages. This process is influenced by alternating wet and dry periods. These wet and dry periods can occur weekly, yearly, or last for several years. Parts of an individual wetland may be in all or one of the stages listed below at the same time. Temporary wetlands will go through all of the stages but may not reach some of the higher water depths. It is this alternating of wet and dry periods that make wetlands productive. Wetlands that do not go through these stages lose productivity, and decline in biotic and wildlife diversity.

Description of Stages:
- Dry - Expanses of bare mud flats characterized by annual vegetation becoming replaced by perennial vegetation, the longer the wetland is in the dry stage.
- Shallow - Water depth of approximately one inch to two feet. Some emergent vegetation present.
- Mid-depth - Water depth of approximately two to four feet. Open water is interspersed with emergent vegetation.
- Open water - Water depth greater than four feet with some emergent vegetation around the edges.

Wetlands are also influenced by other natural forces such as fire and wildlife impacts. During long periods of drought, prairie fires would burn the dry organic layer of wetlands removing years of accumulated sediments. Large herds of bison would trample the surrounding area and vegetation around wetlands. Bison would lie down and create depressions or wallows in wetland basins. They would remove soil, sediments, and plant seeds and take dust baths in dry wetland basins (Steinauer and Collins 1995). Bison wallows were three to five meters (10 to 16 feet) in size (Collins and Barber 1985) and would be free of vegetation. The large amount of hoof action would create exposed soil areas where seeds were planted as they were pushed into the soil. Bison also helped to decrease wetland sedimentation by removing soil during wallowing on their thick shaggy coats (Costello 1969). Muskrats also impact wetlands by removing cattails and rushes which create open water areas.

Managed Wetlands

The Refuge receives water from four sources (see Map 5 and 6):

1) Wild Rice River
2) LaBelle Creek
3) Tributary to Hepi (Cloud's) Lake
4) Tributary to Sprague Lake

The Refuge has 38 semipermanent and permanent wetlands with water level management capabilities on both Tewaukon and Sprague Lake Units.

Historically, water management in these 38 wetlands has maintained approximately three to four feet of water throughout the year. Water was usually passed through the system in the spring; management levels were reached in late spring as snow melt runoff slowed. If possible, wetlands were refilled in the fall to store water in case of low precipitation in the winter and spring. Drawdowns, though planned, were infrequent, short-term and often difficult to do with water control structure capabilities. Often a plan to dry out a managed wetland could not be achieved because local runoff would refill the basin. Evaporation is the main option available to de-water some Refuge pools. With a flow through system, pool outlet elevations are often higher than the bottom of the pool which makes de-watering through the structures in high water years impossible. Past management strategy could be characterized as achieving an average which did not include the natural large fluctuations that normally occur in prairie wetlands.

The planning team recognized the need to refine water management techniques so managed wetland conditions would more closely correlate with the natural processes of drying and flooding. The planning team also recognized that objectives needed to be developed that would help managers collect better water use and water quality data on managed and non-managed wetlands. The planning team felt that a mixture of 20 percent of each stage (dry, shallow, mid-depth, open water) across Refuge managed wetlands and a remaining 20 percent reserve to provide habitat that is deficient in the watershed, was a way to quantify water management objectives. For example, when watershed wetland conditions are dry, the remaining 20 percent (reserve) of Refuge pools will be managed to provide wet stages. This diversity of wetland stages will meet the needs of a variety of wildlife species.

R1.5 Objective: Annually provide for approximately 20 percent in dry, 20 percent in shallow, 20 percent mid-depth, and 20 percent open water wetland conditions on Refuge managed wetlands and manage the remaining 20 percent as a reserve to adjust to local climatic and habitat conditions.

Strategies:

- ✓ Develop a step-down Water Management and Monitoring Plan for Refuge managed wetlands. Continue to provide annual Water Management Plan/Water Use Reports for Regional Office review.
- ✓ Utilizing water level manipulations, alter water levels within and amongst years to assure each unit proceeds through each of the wetland categories during a three to five year period.
- ✓ Utilize fire manipulation to alter vegetation structure and mechanical methods to alter vegetation and disturb soil as needed.
- ✓ Manipulate the 20 percent reserved category to meet habitat deficiencies detected within Red River watershed by annually assessing habitat conditions using information from the National Weather Service and the Habitat and Population Evaluation Team (HAPET) office.
- ✓ Manage Lake Tewaukon and Sprague Lake as open water habitats for migratory waterfowl rest areas.

Water Rights

Water rights for the Tewaukon NWR were established in 1934 pursuant to Section 8270 (repealed 1943) of the Compiled Laws of North Dakota for the year 1913. On August 30, 1937, plans and data were submitted documenting the United States' right to use waters tributary to each dam to its spillway capacity, and after each dam was filled to spillway capacity, an additional amount of water to maintain this level to stimulate aquatic vegetation for migratory waterfowl foods. In 1964, the Refuge was issued three water right permits authorizing use of additional water needed as a result of developments under the Refuge Annual Master Development Plan. (See Appendix D for a more complete description of water rights).

The State Engineer's Office has raised questions about the adequacy of the Refuge's water rights. The Service has agreed that it will review water rights and management on all North Dakota refuges and provide updated information on capacity and water use. Tewaukon NWR will be one of the first to be evaluated in this effort. Additional data collection capabilities on the Refuge need to be developed in order to more accurately record water use. Water use is currently calculated using acre-feet tables that correspond to water elevations on Refuge pools. Each year a report is compiled on water use and proposed management in the Refuge Water Management Plan and forwarded to the North Dakota State Engineer. This report meets the North Dakota statutory requirement for an annual operations plan for all impoundments containing 1,000 acre-feet or more.

R1.6 Objective: Protect existing water rights and clarify water rights needs on Refuge wetlands in order to provide long-term protection of water resources.

Strategies:

- ✓ Improve Refuge water use database by installing data loggers on four dams and three major tributaries of the Wild Rice River and gages in every managed pool on the Refuge.
- ✓ Document Refuge water use and maintain records annually.

Water Quality

Two water quality surveys have been conducted in the Wild Rice Watershed (Map 3). The first was conducted in 1996, by the North Dakota Department of Health's Water Quality Division and the Wild Rice Soil Conservation District (SCD). The goal of this study was to implement an assessment project in order to gather sufficient data to document water quality trends, quantify pollutants, and identify potential nonpoint source pollution within the Wild Rice Watershed. The sampling was done for one year, 1996. Water quality variables monitored included: total ammonia as nitrogen, conductivity, total phosphorus, nitrate plus nitrite as nitrogen, total Kjeldahl nitrogen, total suspended solids, and fecal coliform bacteria. Six monitoring stations were located upstream from the Refuge, one was on LaBelle Creek and one was located downstream of Lake Tewaukon. The station downstream from Lake Tewaukon had the highest net yield for all the water quality variables. The report attributed part of this to the accumulation of excessive nutrients from upstream sources. Controlling upstream pollution and nutrient sources is the best way to decrease the amount of nitrates and sediments from entering the Refuge.

Since 1996, a water quality survey has been conducted by Sisseton-Wahpeton Sioux Tribe's Office of Environmental Protection. The goal of this study was to enhance and protect the Tewaukon NWR by ultimately setting water quality standards. Data has been collected for the last four years. The 1998 raw data was received and currently the Refuge is waiting for the report on the study's findings.

The planning team developed the following objective to improve the water quality of the Wild Rice River as it comes into the Refuge. This would be accomplished through a variety of cooperative private land agreements designed to improve water quality for aquatic plants, wildlife, and fish. The planning team felt that in 15 years a reduction of nitrates and sediments by 15 percent could reasonably be accomplished.

R1.7 Objective: Reduce annual Wild Rice River watershed nitrate inputs and sediment loads as it comes into the Sprague Lake Unit, and LaBelle Creek as it enters the Tewaukon Refuge Unit by 15 percent.

Strategies:

- ✓ Determine the parameters to monitor water quality in the Wild Rice River and LaBelle Creek as they enter the Refuge and implement a water quality monitoring program.
- ✓ Work with Department of Health to conduct a land-use survey to further pinpoint the land-use practices that are influencing the water quality of the Wild Rice River Watershed. This survey should include a stream/riparian area assessment including current vegetation conditions and composition and land-use practices. Utilize the land survey to implement a Clean Water Act Section 319 Watershed Cleanup Project.
- ✓ Develop or use existing Partners for Fish and Wildlife Program and USDA programs to partner with upstream landowners who farm/ranch along the River to establish vegetative buffer zones, reduce livestock impacts along the Wild Rice River, and decrease sediment loads and contaminants.
- ✓ Partner with U.S. Department of Agriculture buffer strip program to establish stabilizing and filtering vegetation along Wild Rice River and LaBelle Creek to prevent erosion and sedimentation.
- ✓ Work with landowners to restore riparian vegetation and wetlands along the Wild Rice River and LaBelle Creek in order to decrease sediment loads, contaminants, and help reduce flooding.

Non-Managed Wetlands

The Refuge has over 1,500 acres of non-managed prairie wetlands. These wetlands are diverse in nature and include temporary, seasonal, and semipermanent types. The majority of these wetlands are surrounded by grassland cover while a small portion are found in cropland. Not much information has been gathered about their health or condition.

The wetlands in Refuge cropland are subject to varying degrees of siltation. Cultivating wetland basins (disturbing the vegetation) has contributed to soil erosion. Wetlands in agricultural fields receive more sediment from surrounding areas than wetlands surrounded by grasslands (Gleason and Euliss 1998). Other wetland impacts include increased turbidity, sediments, and a decrease of invertebrate production, a food source for other wildlife (Gleason and Euliss 1998). One of the control measures that could reduce sediment in agricultural fields is vegetative buffer strips around wetland basins (Dillaha et al. 1989). A need exists for more work on methods to restore pool depth in silted-in wetlands, evaluation of sedimentation effects on wetland functions, and effective ways to reduce sediment inputs (Gleason and Euliss 1998).

R1.8 Objective: Determine the quality and health parameters of non-managed prairie wetlands in order to preserve their natural productivity, longevity, and function.

Strategies:

- ✓ Gather baseline information on Refuge wetland conditions and identify potential and existing threats.
- ✓ Implement management methods to reduce or eliminate threats to wetland productivity and function.

Native Woodlands

Historically Refuge woody vegetation occurred along riparian corridors and around some wetlands. Bailey (1926) states that these southeastern North Dakota riparian woodlands were composed of American elm, red elm, white ash, box elder, willow, bur oak, serviceberry, chokecherry, buffaloberry, and rose. Today native woody vegetation is still present on the shores of Lake Tewaukon, on the peninsula that juts out into the Lake, and along LaBelle Creek.

Managing native woodlands has had little emphasis in previous Refuge planning efforts. The planning team recognizes that while this habitat component makes up a very small portion of the Refuge land base, it is important habitat for thrushes, orioles, warblers, and other tree nesting birds that reproduce on the Refuge. The establishing Refuge legislation language sets aside this area as a breeding ground for migratory birds. Managers need to have a better plan for the perpetuation of the native tree resource and the migratory birds that breed there.

R1.9 Objective: Maintain native woody vegetation on the Lake Tewaukon peninsula, on the shore of Lake Tewaukon, and along LaBelle Creek corridor to provide roosting habitat, food, and cover for migratory and resident birds and other wildlife.

Strategy:

✓ Coordinate with a forest resource specialist to evaluate health of existing native wooded sites and provide recommendations for a management plan.

Nonnative Plant Management On the Complex

Several nonnative plant species exist on Complex lands and waters and are listed below:

Grasslands:
- Leafy spurge
- Canada thistle
- Musk thistle
- Bull thistle
- Kentucky bluegrass
- Smooth brome
- Yellow and white sweetclover
- Russian olive trees

Wetlands:
- Reed canary grass
- Canada thistle
- Kentucky bluegrass
- Smooth brome

Watch Species:
- Purple loosestrife (sighted in several locations on private land in the District)

All of these nonnative plants were intentionally or accidentally brought over to the United States from other countries. Without their natural control agents, these plants began to aggressively invade many of this country's native habitats. These nonnative plant species can out-compete native plant species or other desired plant species when frequent disturbances (grazing and burning) and nonnative plant control methods are not conducted. The Complex staff uses a multi-faceted approach to nonnative plant control termed Integrated Pest Management (IPM). This approach to the control of pests (nonnative plants in this case) utilizes a practical, economical, and scientifically based combination of biological, mechanical, and chemical control methods. Many of these nonnative plant species are very aggressive, and relying on only one control method is usually not effective. A combination of methods has been proven to increase effective control over these plants. Nonnative plant species can crowd out the native or desirable flora making the grasslands or wetlands unattractive to many species of wildlife. For example, uniform grasslands that are comprised primarily of smooth brome and Kentucky bluegrass provide little in the way of nesting cover for ground nesting birds and very poor cover in the winter.

Complex staff spend a considerable amount of time and funds on nonnative plant control. In 1999, over $30,000 dollars (labor and chemical costs) were spent on leafy spurge, Canada thistle, musk thistle, and bull thistle alone. Control of these four plant species will continue to be a top priority on Complex lands. Russian olive tree control also received more attention on the Complex (Refuge and Hartleben WPA) for the past five years. Several methods were tried until a time efficient and effective treatment was developed. Over 2,000 Russian olive trees have been chemically treated on the Hartleben WPA and Refuge to date. Control of the other nonnative species (smooth brome, Kentucky bluegrass, and sweetclover) is currently managed with prescribed burning. More effort and methods will need to be used in the future to control these two nonnative grass species and sweetclover.

R1.10 Objective: Reduce by 15 percent (measured as canopy cover) nonnative plants on Complex lands and waters.

Strategies:

- ✓ Annually evaluate fields through visual observations and continue to aggressively manage highly invasive nonnative species focusing on Canada, musk and bull thistle and leafy spurge.
- ✓ Use a variety of techniques and tools including: chemical, mechanical, and biological methods, prescribed burning and grazing to control nonnative plants.
- ✓ Continue to evaluate nonnative control methods for effectiveness and gather information on methods developed in the future.
- ✓ Monitor Complex for additional nonnative plant species and control new invasions before they become a large problem.
- ✓ Document and coordinate with the County Weed Board and State to control nonnative plant species on and off Service lands.

Prescribed Burning and Wildfires

The primary reason the remaining native prairie is not in better condition is the lack of periodic disturbance (Service Ecological Services Botanist, Kathy Martin 1998; Barbour et al. 1987; Duebbert et al. 1981). Grassland species of the northern great plains evolved under periodic disturbance and defoliation from bison and fire (Eldridge 1992; Barbour et al. 1987). This periodic disturbance was important for prairie plant health and maintained a place of enormous diversity for thousands of years. Defoliations can be mimicked to some degree by the periodic use of prescribed fire, grazing, and to a lesser extent, haying. Fish and Wildlife Service botanists recommend that a burning and/or mowing regime be used to enhance the tallgrass and low prairie communities (Kathy Martin 1998). Periodic rejuvenation using fire, grazing or haying is also recommended for planted cover in order to maintain optimum vigor (Duebbert et al. 1981). Prescribed fire on the Complex has typically been carried out in the spring and fall. More work is being done to incorporate summer burning into the rotation to mimic historic fire occurrence.

Since the 1960s, Complex managers have used prescribed fire to restore, change, and maintain the diversity in plant communities. Prescribed fire is also used to reduce hazardous fuels on Complex grasslands. Hazardous fuels have six inches or more of accumulated dead litter material. A large amount of litter can cause additional control problems for fire suppression efforts. Reducing these high amounts of litter can reduce fire intensity and make wildfires easier and more cost effective to control. The Tewaukon Complex has an average of one wildfire per year. Human caused fires account for 99 percent of all wildfires on the Complex. Wildfires on the Complex are usually caused by equipment or fires escaping from adjacent private land.

Fire is an important grassland management tool that can be utilized to accomplish Complex habitat management objectives. Fire is also a tool that can quickly destroy Federal or private equipment, buildings, and property and hurt or kill those that work with it. Proper planning, training, and equipment reduces the risk of this management tool.

The following two objectives recognize that prescribed burning and wildfires play an important role in Complex habitat management. The objectives also recognize that fire inherently has human health, social, and economic risks that other management tools do not.

R1.11 Objective: Utilize prescribed fire, in an ecosystem management context, applied in a scientific way under selected weather and environmental conditions, on approximately 5,000 acres of grasslands and 200 acres of wetlands annually on the Complex to accomplish habitat management objectives.

Strategies:

- ✓ Maintain a current Complex Fire Management Plan and implement the Plan to accomplish resource management objectives.
- ✓ Conduct all fire management programs in a manner consistent with applicable laws, policies, and regulations.

R1.12 Objective: Protect life, property, and other resources from wildfire by safely suppressing all wildfires on Complex lands and adjacent private lands.

Strategies:

- ✓ Use strategies and tactics that consider safety and values at risk.
- ✓ Use prescribed fire to reduce hazardous fuels on Complex lands to reduce the intensity and favorable conditions for wildfires.

More detailed information on wildfire suppression and prescribed burning methods, timing, and monitoring can be found in a step-down Complex Fire Management Plan.

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Wildlife

__B.2 Goal__: Preserve, restore, and enhance the diversity and abundance of migratory birds and other native wildlife with emphasis on waterfowl, grassland and wetland-dependent birds.

> *"Refuges Are Places Where Wildlife Comes First."*
>
> - U.S. Fish and Wildlife Service - Fulfilling the Promise, 1999

Waterfowl (Ducks, Geese, and Swans)

North America's greatest duck producing area is known as the Prairie Pothole Region (Figure 4). This area includes south central Canada, eastern North and South Dakota, western Minnesota, and north central Iowa. The Refuge provides nesting habitat for 13 species of waterfowl, and migrating food and resting habitat for 21 species of waterfowl. Blue-winged teal, mallards, gadwall, northern pintails, and northern shovelers are common nesters in Refuge grasslands while redheads, canvasbacks, and ruddy ducks nest overwater in Refuge wetlands. Wood ducks nest in Refuge trees. Large flocks of Canada geese, snow geese, and ducks use Refuge crop fields to feed during spring and fall migration. Prior to 1900, the giant Canada goose was distributed throughout North Dakota. Hunting pressure, egg collecting, and habitat destruction decimated this population during the 1900s. Restoration of giant Canada goose populations began in the 1930s with considerable effort made in the 1960s to 1970s (Lee et al. 1984). The Refuge was a release site for some of the restoration efforts. Since then, the return of the giant Canada goose to North Dakota has been a huge success story. Resident Canada geese populations have grown from their reintroduction populations in the 1970s to levels that yield 10 to 15 area crop depredation complaints per year.

> *"The original northern prairies were strewn with small lakes, potholes, and marshes and veined with tiny creeks ... Through spring, summer, and fall these regions were darkened with clouds of waterfowl of all kinds."*
>
> - John Madson, 1982, *Where the Sky Began*

Waterfowl Nesting

The Refuge is surrounded by intense agricultural use, that severely alters the landscape. The Refuge provides the majority of quality waterfowl upland nesting habitat in the area. The Conservation Reserve Program (CRP) has greatly increased grassland cover throughout the Complex in the past 10 years. However, the continued presence of this cover on the landscape depends on funding for this U.S. Department of Agriculture program. As grasslands are fragmented and tracts become smaller, nesting ducks become more vulnerable to predation. Predation has been identified as a principal cause of nest loss (Sargeant and Raveling 1992). In areas with intense agriculture, nesting ducks and their eggs are one of the most abundant, vulnerable, and desirable prey types available to red foxes (Sargeant et al. 1984). Large tracts of thick residual cover require more effort for predators to search. At the Refuge, the major predators on ducks and duck eggs include: red fox, striped skunk, raccoon, mink, and Franklin's ground squirrel. (See Land Use and Wildlife Species Changes Section for more discussion.) Avian predators including northern harriers, red-tailed hawks, and great horned owls prey on duck and young. Gulls can also destroy nests on islands. The red fox is the main ground nesting duck predator in southeastern North Dakota. Red fox will not only eat and destroy eggs but will kill the hens if possible. Red fox kill an estimated 242,000 dabbling ducks annually in North Dakota during the three month (approximate) fox denning season (Sargeant et al. 1984). Removal of predators (primarily red fox) can cause nest success to increase from 8 percent (Sargeant et al. 1995) to an average 30 percent (Refuge nest success records 1990-1998). A nesting success of approximately 15 to 20 percent is suggested to maintain stable duck populations of the five most common species of dabbling ducks (Cowardin et al. 1985, Greenwood 1986, Klett et al. 1988). In severely altered landscapes, like the Refuge, intensive management such as predator control is the only efficient way to increase nest success (Clark and Nudds 1991, Nudds and Clark 1992). The most effective time to conduct predator control is in the spring when red fox are caring for their young and little movement of foxes occurs in and out of an area (Sargeant et al. 1993).

Fox, Cindie Brunner

Other activities that increase nesting success have been researched, discussed, and examined to determine the most economical, feasible, and effective method. One possibility includes purchasing enough additional tracts of land adjacent to the Refuge to create a large enough block of contiguous grassland habitat to increase nest success. This approach would be similar to USDA's Conservation Reserve Program (CRP). To provide for grassland cover on 100 acres of cropland for a 10-year period would cost $40,000 to $50,000 assuming a $40 to $50 per acre, per year payment. This would not be economically possible at this time. Predator proof fences are another way to increase nesting success. Three predator fences (100 total acres) have been built on the Refuge. Predator fences cost approximately $100,000 per fence for materials and contracted labor to build. They are labor intensive and involve many staff hours to maintain. Nesting success is high in predator fences. According to Refuge nest dragging information (1987-1999), an average nest success for the fences is 85 percent. Predator control on the entire Refuge for two to three weeks in the spring of the year averages about $2,500. This focused predator control effort effectively and efficiently meets our nesting success objective.

To develop the next objective, the planning team considered the following information: 1) the importance of the Refuge to nesting waterfowl; 2) the extensive research that has been done to evaluate predator impacts on nesting populations; 3) and the nest monitoring studies that have been conducted on the Refuge; and 4) Service policy and implementation guidelines for management of predators to benefit breeding waterfowl on Service lands. A nesting success of 30 percent (Mayfield) was chosen because it maintains stable Refuge duck populations and contributes to the overall duck population.

R2.1 Objective: Maintain an average upland duck nesting success of at least 30 percent (Mayfield) to increase waterfowl production on the Refuge.

Strategies:

- ✓ Continue to annually monitor upland duck nesting success utilizing standard nest search methods on selected Refuge uplands.
- ✓ When the average nesting success falls below 30 percent (Mayfield) and wetland conditions are favorable, initiate predator (red fox, raccoon, skunk, mink, and feral cat) control in the spring prior to the waterfowl nesting season, for approximately two to three weeks.
- ✓ Maintain existing predator exclosure fences and continue to monitor to determine duck nesting success.

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Planted Foods

Historically, the majority of Refuge uplands were farmed. Since these lands have been acquired, most of the cropland has been seeded to grassland cover (See Map 8). Currently, the Refuge has approximately 500 acres of cropland. Corn, millet, and winter rye or winter wheat are left as a Refuge share for migrating waterfowl and resident wildlife in the winter. Refuge farm cooperators maintain Refuge food plots on a 25:75 crop share basis. The number of interested cooperators is dwindling due to the small field sizes and the decreased variety of approved herbicides. It is important to note that approximately 135 acres of cropland are considered necessary to support migrating waterfowl and resident wildlife. Crop sharing is currently the only method available to provide this resource. Cooperators could be compensated for planting only 135 acres of cropland if a consistent annual funding source could be developed.

Farming on refuges is controversial. National and regional trends in refuge management have emphasized scaling back or terminating farming programs to reduce chemical use and restore natural vegetation. Biological reasons for maintaining the Tewaukon farming program identified in the 1996 Cropland Management Plan included providing food sources for migrating waterfowl, wintering deer (approximately 200 to 300), and other resident species. The relationship between the Refuge farming program and regionally popular game species, primarily deer and pheasants, was discussed by the planning team. The planning team recognized that establishing Refuge legislation language describes providing habitat for "other wildlife" in addition to migratory birds.

Refuge cropland food sources can also be linked to two waterfowl overpopulation concerns. Though the overall contribution of Tewaukon Refuge crop fields to the growth of mid-continent snow goose numbers is minimal, the availability of grain food sources has been linked to improved snow goose survival and the damage this population is doing on tundra nesting grounds. Local populations of Canada geese also have experienced rapid growth in the past 10 years due in part to their use of Refuge crop fields. The planning team recognized that many biological factors exist in addition to Refuge cropping that affect Canada Goose populations, such as record water levels in area wetlands and changes in crop rotations like the addition of soybeans. The crop damage that local Canada geese are causing in Richland and Sargent Counties has resulted in an increased number of complaints in the past five years. This resulted in the establishment of an experimental 1999 September hunting season to try and curb the growth of this population.

Canada Goose, Cindie Brunner

There are also less tangible benefits to providing small grain, row, and hay crops on a small portion of Refuge uplands such as the reduction, or perceived reduction of crop depredation on private lands. After discussing these issues, the planning team developed the following cropland objective.

R2.2 Objective: Maintain no more than 135 acres of cropland as a Refuge share to provide green browse and millet/corn for migratory waterfowl.

Strategy:

- ✓ Work annually with farm cooperators to plant and maintain Refuge food plots on a 25:75 crop share basis. Work to find alternative methods to the existing crop share farming program.

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> *"Then, one day in late February or early March, the migrants began returning to the old prairie. They brought spring with them, and a surge of life and excitement... serried flocks of ducks and geese beyond number, and endless wedges of curlews and plovers...giant cranes, and a multitude of small minstrels – warblers, larks, singing sparrows, longspurs, redwings, and a host of others... The prairie pulse quickened; it was spring again, with the birds come home."*
>
> - John Madson, 1982, *Where the Sky Began*

Migratory Birds

The Refuge was established as a refuge and breeding ground for migratory birds (See Appendix A for a list of wildlife species observed on the Refuge). Migratory birds and habitat management for migratory birds will continue to be emphasized at the Refuge. Waterfowl have historically received management priority due to the Refuge's location in the highly productive Prairie Pothole Region. The concern over the decline of other migratory birds in the country has increased the availability of information on other nesting bird species. Refuge management priorities will expand to include other migratory bird species at risk.

Shorebirds

Thirty-seven species of shorebirds including 28 species of sandpipers commonly cross the interior plains during spring and fall migrations (Skagen 1997). The habitat used by migratory shorebirds consists of small, shallow wetlands or wet muddy areas. Shorebirds inhabit the prairie region from mid-March through mid-October depending on weather and water conditions. Shorebird populations migrating through the Great Plains tend to be scattered and stop periodically to replenish fat reserves (Skagen 1997). Shorebirds are flexible in their migration stops because prairie wetland levels and conditions are highly variable. Eighteen species of shorebirds breed in North Dakota (Stewart 1975). A variety of shorebirds use the Refuge when wetland conditions meet their needs. The variety of wetland stages described in the Refuge Wetlands Section will provide habitat for shorebirds.

Wading Birds

Like shorebirds, the number of wading birds (herons, egrets, rails, bitterns) breeding on the Refuge fluctuates with the availability of water. A heron colony has existed on the Refuge since 1993 when water returned to the southeastern North Dakota. Great blue herons, great egrets, double-crested cormorants, and black-crowned night herons nest in the colony located in dead trees in Pool 7A. No record exists of a heron colony on the Refuge prior to 1993. The variety of wetland stages described in the Refuge Wetlands Section will provide habitat for these species.

Raptors

Raptors (including eagles, hawks, falcons, and owls) can be seen on the Refuge. The three most common hawks nesting on the Refuge are the red-tailed hawk, northern harrier, and the Swainson's hawk. Great horned owls are the most common owl nesting on the Refuge. In the year 2000, an increase in short-eared owls nesting on the Refuge was observed. Several species of raptors migrate through the Refuge in the spring and fall. Most notable are bald eagles which follow the waterfowl migrations and can be regularly seen around Lake [illegible] and Sprague Lake. The variety of grassland, wetland, and [illegible] habitats on the Refuge will continue to provide habitat for these species.

Woodland Migratory Birds

Some woodland migratory bird species have increased their number in North Dakota from 1967 to 1988 such as the western kingbird, brown thrasher, and song sparrows along with species like American robins, house sparrows, cliff swallows, and barn swallows that are associated with people and structures (Johnson et al. 1997). Maintaining native woody vegetation as described under the Refuge Native Woodlands Section will provide habitat for woodland dependent species.

The following objective was developed to help Refuge Managers and Biologists gather additional information about the populations of birds that breed on the Refuge in order to determine how to best provide habitat for their life needs.

R2.3 Objective: Initiate a baseline breeding bird survey on the Refuge to monitor local breeding migratory bird population changes over time.

Strategy:

✓ Conduct point count surveys.

Grassland Migratory Birds

Herkert (1995) looked at the data from the North American Breeding Bird Survey between 1966 and 1993 and found that grassland migratory bird species are declining faster than any other group of breeding species in the Midwestern United States. Bobolinks and western meadowlarks showed the greatest decline (Herkert 1995). Habitat fragmentation is one of the causes of population decline in grassland birds (Samson 1980, Herkert 1994, Vickery et al. 1994). Habitat size is important for some grassland birds (Samson 1980, Herkert 1994, Vickery et al. 1994) and the amount of edge (the area where two different habitats overlap or are adjacent to each other) of that patch of habitat is also important (Helzer and Jelinski 1999). Some grassland species avoid nesting near different habitat edges such as a grassland patch overlapping or adjacent to a woodland patch (Johnson and Temple 1986, Delisle 1995, Helzer 1996). Higher predation on nests and birds and parasitism of nests increased for grassland birds the closer they were to wooded edges (Johnson and Temple 1986 and 1990, Burger et al. 1994). See Refuge Habitat Grassland Native Prairie Section for more discussion on grassland migratory bird habitat.

Meadowlark, Cindie Brunner

R2.4 Objective: Monitor relative abundance and breeding status for four tallgrass prairie indicator bird species in the six areas identified for grassland bird management to provide feedback and information on the tallgrass prairie habitat management approach.

Strategy:

✓ Develop a step-down Monitoring Plan to address changes over time in relative abundance on a local scale and breeding documentation of the four indicator species (northern harrier, upland sandpiper, bobolink, and grasshopper sparrow) on the six Prairie Focus Areas.

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Migratory Bird Disease Outbreaks

The first documented migratory bird disease outbreak on the Refuge occurred in April 1991. This was a small outbreak, 79 total birds were collected (76 snow geese, 1 white front goose, and 2 lesser scaup) on Lake Tewaukon. The cause of the disease was avian cholera. Another small disease outbreak occurred in August of 1999 in Pool 7A and Pool 3. Ten ducks, one Canada goose, one cormorant, and one least sandpiper were collected from the two sites. Except for the Canada goose, botulism was determined to be the cause of death in all of the birds. Water levels in Pool 7A dropped quickly due to a failure of a structure. Rapid water fluctuations and warm weather are favorable conditions for botulism.

Procedures for attempting to contain migratory bird disease outbreaks are similar for most of the diseases encountered on the Refuge. These procedures include monitoring wetlands for dead or dying birds, immediate collection of dead birds, submitting specimens to the National Wildlife Health Center, and safe and proper disposal of the remaining carcasses. Promptly removing dead and dying birds from the disease outbreak area decreases the exposure that other birds and other animals have to the carcasses and reduces the spread of the disease.

R2.5 Objective: Respond to and contain migratory bird disease outbreaks by applying safe and proper procedures as recommended by National Wildlife Health Center protocol.

Strategies:

- ✓ Manage water level conditions on the Refuge to minimize conditions known to precipitate diseases outbreaks.
- ✓ Submit carcasses to the National Wildlife Health Center for evaluation and determination of cause of death.
- ✓ Properly follow disease management procedures to limit impacts to migratory bird populations.

Native Resident Wildlife

Mammals

The tallgrass prairie ecosystem was a vast and diverse habitat for a variety of wildlife. Bison, grizzly bear, wolves, elk, antelope, mule deer, bobcat, moose, and river otter (Bailey 1926) once lived in the tallgrass prairie wetland ecosystem. Today, these species are either not found here at all or are present in very low numbers. White-tailed deer are the only common Refuge large animal left from the group of large mammals historically found on tallgrass prairie. White-tailed deer numbers have increased in response to changes associated with agricultural and settlement. Today approximately 200 to 300 white-tailed deer winter on the Refuge, taking advantage of shelterbelts, croplands, and other habitats. Only one objective was developed by the planning team to address specifically managing the Refuge white-tailed deer population. Many of the other habitat objectives will support deer populations.

R2.6 Objective: Maintain an average winter deer population of no more than 250 to minimize vegetative damage on the Refuge and crop damages on adjacent lands.

Strategy:

- ✓ Work cooperatively with the ND Game and Fish Department to adjust Refuge deer hunting permits, monitor wintering deer numbers, and determine carrying capacity.

Various other small and medium sized mammals can be found on the Refuge including: jumping mice, raccoons, eastern cottontails, white-tailed jackrabbits, long-tailed weasels, woodchucks, beaver, muskrats, mink, badgers, coyotes, and red foxes. Habitat management described in the CCP is expected to sustain these populations.

R2.7 Objective: Develop a specific Monitoring Plan to gather baseline information for small and medium mammal populations on the Refuge.

Birds

Resident native birds are few due to very cold and snowy winters that limit food and shelter. Though classified as migratory birds, great horned owls, woodpeckers, white-breasted nuthatches, chickadees, and horned larks are a few of the birds that are present on the Refuge year-round. Habitat management described in the CCP is expected to sustain these populations.

Upland Game Birds

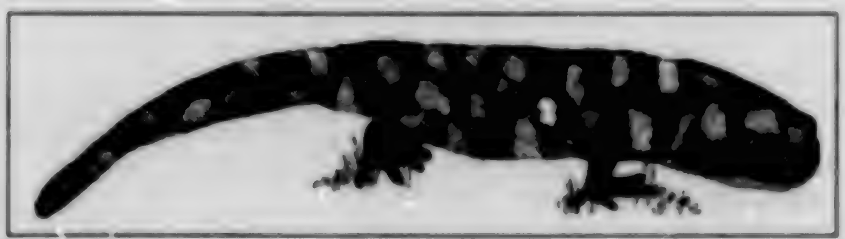
Only one species of native upland game bird, the sharp-tailed grouse, can be found on the Refuge. Sharp-tailed grouse are few in number and only spotted occasionally on the Refuge. There has been a lot of debate about the presence of greater prairie chickens which were not thought to occur in North Dakota prior to the late 1870s (Stewart 1975). By 1884, prairie chickens were as common as sharp-tailed grouse and spread rapidly throughout the State (Stewart 1975). Downward population trends started in the early 1940s; by 1972, fewer than 400 birds existed in North Dakota (Johnson et al. 1997). The planning team did not develop management objectives for prairie chickens since they have not been documented on the Refuge nor for sharp-tailed grouse since their occurrence on the Refuge is limited to occasional sightings.

Reptiles and Amphibians

Throughout the world there has been an apparent decline of amphibian species (Yoffe 1992; Blaustein 1994; Corn 1994). Prairie amphibians have had a longer history of decline than those from other habitats (Corn and Peterson 1996). Northern leopard frogs almost disappeared from tallgrass prairies in Wisconsin and Minnesota in the 1960s and 1970s (Gibbs et al. 1971; Hine et al. 1981). The cause of decline is not well known although commercial harvest (Gibbs et al. 1971), and contamination from agricultural chemicals (Hine et al. 1981) are two of the more likely causes. Of the 124 species of reptiles and amphibians that occur in prairie habitats in central North America, 42 species are associated with grassland habitats, 28 are primarily aquatic or require permanent water (i.e. leopard frogs); 28 use forests or woody vegetation (grey treefrog), and 16 species are use a variety of habitats (tiger salamander) (Corn and Peterson 1996). Protection, conservation, and management of prairie reptiles and amphibians has not received much attention. Because of the sharp decline of wetland and prairie habitat in the tallgrass prairie, the abundance of aquatic species is just a fraction of their former abundance (Corn and Peterson 1996).

Little population information exists for many refuge species such as reptiles, amphibians, small mammals, or invertebrates that fit the description of "other wildlife," as described in establishing Refuge legislation language. In order to provide better background for refuge managers to evaluate options, basic population data need to be collected as described in the following objective.

R2.8 Objective: Develop a specific Monitoring Plan to gather baseline information for amphibian and reptile populations on the Refuge.



Tiger Salamander, Cindie Brunner

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Fish

Little historical survey information has been gathered on fish populations in the Wild Rice River or in Refuge pools before 1966. Since that time, researchers, the North Dakota Game and Fish Department, the North Dakota Department of Health, North Dakota State University Department of Zoology, and the Fish and Wildlife Service have conducted fish surveys in the Wild Rice River. Copes and Tubb (1966) conducted fish surveys in the Red River tributaries including eight sampling stations scattered along the Wild Rice River. Sampling was conducted twice a month from June to September in 1965. One of the sampling stations was below Silver Lake before it entered the Sprague Lake Unit, and one was located near Cayuga downstream of the Tewaukon Unit. Northern pike, carp, fathead minnow, white sucker, black bullhead, brook stickleback, pumpkinseed, black crappie, yellow perch, and walleye were found in the Silver Lake sampling station (Copes and Tubb 1996). No fish were sampled in the Cayuga station possibly due to very turbid, low flowing, and polluted (oil) water. Farther downstream an additional two species were sampled, trout-perch and bigmouth buffalo. Transplantation (stocking) of fish, selective poisoning to maintain sport fisheries, high turbidities, water temperatures, erratic stream flow, and heavy silt loads all have some effect on fish distribution (Copes and Tubb 1966). No endangered, threatened or rare fish have been sampled on the Refuge.

The amount of habitat for native stream fish on the Refuge is limited. The Wild Rice River flows are highly variable and can limit fish movement and habitat. The four large Refuge dams on the Wild Rice River also restrict fish movement and alter natural stream habitat. The primary focus of fisheries management has been on recreational fisheries in Lake Tewaukon and Sprague Lake (for more information on recreational fishing see Refuge Public Use and Recreation Fishing Section).

Fish stocking in Lake Tewaukon and Sprague Lake for recreational fishing has probably been going on long before the Refuge was established. The Service began stocking Lake Tewaukon in 1940 and has continued to stock fish almost every year since then. The following species have been stocked by the Service in Lake Tewaukon: bluegill, black crappie, walleye, northern pike, black bullhead, largemouth bass, yellow perch, smallmouth bass, pumpkinseed, and tiger muskie. Sprague Lake has been stocked by the Service since 1978. The following species have been stocked by the Service in Sprague Lake: yellow perch, northern pike, walleye, black crappie, fathead minnow, channel catfish, and largemouth bass.

The planning team did not develop specific management objectives for native fish due to the intermittent flows of the Wild Rice River and alteration of the Wild Rice River by the four large Refuge dams. No fish introductions are planned for other Refuge wetlands because recent research indicates there is direct competition for food between fish and ducklings (Hill et al. 1987 and Giles 1994). Water quality of the Wild Rice River is addressed in the Refuge Riparian Section and Refuge Managed Wetlands Water Quality Section. Recreational fishing is addressed in the Refuge Public Use and Recreation Fishing Section.

Nonnative Wildlife

In the Fish and Wildlife Service manual under the Populations Management Section (7 Refuge Manual 8.1), the issue of nonnative species introduction and management is addressed by policy. The policy states that the National Wildlife Refuge System exists for the protection and management of plants and animals native to the United States. This policy directs refuge managers "to prevent further introductions of exotic [nonnative] species on national wildlife refuges [including all lands and WPAs] except where an exotic [nonnative] species would have value as a biological control agent [an example would be leafy spurge beetles and tiger muskies] and would be compatible with the objectives of the refuge."

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Healthy populations of several species of wildlife both nonnative to North America and to North Dakota can be found on the Refuge. These nonnative species compete with native wildlife for food, water, cover, and space. Some species, like cats and dogs, will kill other native wildlife for food and sport. Other species, like house sparrows and starlings, out-compete native species for resources like nesting cavities that could be used by bluebirds, tree swallows, and house wrens. Carp do a great deal of habitat damage by destroying wetland vegetation that is utilized by water birds and other fish species. Carp also occupy a large amount of habitat that could be occupied by native fish species. The following objective was developed to address the range of options Refuge managers will use to manage these species.

R2.9 Objective: Restrict the spread of existing and additional nonnative animal species (carp, house sparrows, feral dogs and cats) that adversely impact native species.

Strategies:

- ✓ Reduce population densities of carp to maintain a total biomass of less than 30.0 kg/survey. This was recommended in the 1996 Fisheries Management Plan for Refuge waters by applying appropriate management tools including the addition of predator fish (i.e., tiger muskies), minimum size limits on predatory fish (northern pike and walleyes), water management, chemical control, and commercial harvest.
- ✓ Apply, when appropriate, management tools (including lethal, nonlethal methods and habitat manipulation) that eliminate or limit the expansion of introduced animal species such as feral dogs and cats, house sparrows, and carp.
- ✓ Gather existing information and promote additional research on management techniques and affects of nonnative animal species on native flora and fauna.

Other nonnative species, like the ring-necked pheasant, are not known to adversely impact Refuge native species. However, habitat management designed to benefit pheasants can adversely impact Refuge native species. For example, the best habitat management to improve Refuge pheasant populations, outside of requesting much milder winters and a dry springtime, would be to establish more large blocks of shrubs and trees for winter cover and incorporate more, or change the distribution of winter food plots. Both of these techniques would be harmful to grassland nesting migratory birds that avoid shrub and tree edges and have poorer reproductive success in smaller blocks of grassland cover (Helzer and Jelinski 1999). When considering management options, the following objective guides managers to favor native grassland nesting migratory birds. Managers must also consider the establishing purpose of the Refuge for migratory birds and policy concerning native and nonnative species. A number of objectives described in this Plan, such as maintaining cropland (i.e., millet bales), increasing the density of grassland cover, and using predator control, will still provide pheasant habitat and improve their nest success.

R2.10 Objective: Refrain from carrying out additional management activities that specifically encourage population expansion of existing introductions (pheasants, gray partridge) to the detriment of native species.

Wildlife Disturbance

The demand for wildlife associated recreation has increased dramatically over the last 20 years. Outdoor recreation can affect wildlife behavior (i.e., feeding, resting) and survival to varying degrees.

Wildlife seek refuge from all forms of disturbance, particularly those associated with loud noise and rapid movement. After reviewing several thousand journal articles and books, Dahlgren and Korschgen (1992) reported that studies indicate that water users were the primary cause of most disturbances to waterfowl. Mathews (1982) listed activities in order of decreasing disturbance to waterfowl as: rapid overwater movement and loud noise (power boating, waterskiing); overwater movement with little noise (sailing, wind surfing, rowing, canoeing); little overwater movement or noise (wading, swimming); and activities along shorelines (fishing, bird-watching, hiking, and traffic). These disturbances can decrease the amount of time a bird spends feeding by seven times and increases the amount of time a bird incurs high energy costs associated with flight (Edington and Edington 1986). During a five-year study on a refuge in southern Wisconsin, human activity (recreational, vehicle and non-vehicle activities) resulted an average of 43 percent of the ducks departing the area (Vander Zouwen 1983).

Wildlife expend considerable energy and effort in order to successfully reproduce and raise young. Disturbance at this time of year by humans can scatter broods and separate adults from young thus increasing their risk of predation, exposure, and starvation due to inexperience in finding food (Sherwood 1965). In studies in England and Germany, an 80 percent decrease of waterfowl nests and an 85 percent decrease in duck pairs were related to the increasing number of anglers during the breeding season (Reichholf 1976, Åhlund and Götmark 1989). Disturbance from observers caused a 10 percent nest abandonment rate by mallards using artificial nest baskets in an Iowa study (Dahlgren and Korschgen 1992).

Winter survival of resident wildlife, i.e., white-tailed deer, can be affected by a variety of disturbances ranging from snowmobiles to cross-country skiers. Human caused wildlife disturbance during the winter can increase stress and can contribute to the death of wildlife.

The planning team discussed wildlife disturbance during migration, the nesting and breeding season, and the winter season. The team also discussed the pros and cons of flexible versus standard dates for opening roads in the spring, public notification through news releases, and Refuge pamphlets.

Wildlife Disturbance Closure Background

To limit disturbance to migratory water birds using Lake Tewaukon and Sprague Lake, the road around the north shore of Lake Tewaukon and the trail around the south side of Sprague Lake have been closed to vehicles beginning on October 1 for the past 10 years. Secondary considerations for closing these roads through the winter have been to limit winter wildlife disturbances (see Wintering Wildlife Habitat Section) and reduce the opportunity for visitors to get stuck in snow on these unplowed roads. The dates that these roads have been opened for public travel in the spring have varied. The Lake Tewaukon road has been re-opened for public travel when the frost is out and the road surface is dry. This reduces maintenance costs. Generally, the Lake Tewaukon road is re-opened after the main migration concentrations of migratory waterbirds have moved on. The Sprague Lake trail does not dry out quickly and is not open to public traffic until after the spring concentrations of migratory waterbirds have moved through. Peak concentrations of migratory water birds on the Refuge have historically been recorded during the second and third weeks of April. However, early spring weather and open winters like those in 1998 and 1999 have moved peak concentrations of birds on the Refuge ahead by as much as a month. Gates are used to close each of these access points.

Boat access for fishing on both lakes has historically been closed on the Friday before the opening of the general waterfowl season, but has been standardized to October 1 for the past few years. Boat traffic is permitted again on May 1.

Shore fishing from the Point is popular during the spring and fall. The Point Road on the peninsula that juts out into Lake Tewaukon has traditionally been closed to limit disturbance to the winter deer herd and has usually been closed prior to the opening of deer gun season. This date varies from year-to-year. A second consideration for closing this road is the operation of an aerator in Lake Tewaukon south of the Point, which is used to prevent winter fish kill. Lake ice is always thin above the aerator lines, and this area can be hazardous for anglers. This portion of the lake is easily accessed from the west end of the Point Road. This road is not maintained in the winter and closing it also keeps people from getting stuck in the snow during the winter. The Point Road has also been re-opened to the public in the spring when the surface is dry. In most years, it is re-opened after spring concentrations of migratory waterbirds have moved through. A wooden barricade with a sign is used to close this road.

Much of the public input we received focused on access to the Point in the fall and spring. People felt that since the Point Road provided access to such a small percentage of the lakeshore, and the remainder of the Refuge was closed to the public during waterbird migration periods, the Point Road could remain open and the Refuge would still provide adequate rest area.

Migratory Bird Habitat

Bird migration periods vary from year-to-year depending on regional resource availability, climatic events along the migration corridors, and the bird species. For example, Refuge peak waterfowl migration in the spring occurs from March through April while peak bobolink migration usually occurs from May through early June. The number of birds that use the Refuge as a resting and feeding area varies widely from year-to-year depending on available water and food in the surrounding region. For example, in March of 1998 the only available open water in our region was Lake Tewaukon, and at that time, an estimated 700,000 snow geese used the lake. Compared to the fall of 1999 when open water was available all over the region, only an estimated 5,000 snow geese used the Refuge.

Current road closures effectively limit disturbance of waterbirds to 5 percent of Lake Tewaukon and 10 percent of the Sprague Lake shorelines. The majority of Refuge anglers fish the shoreline areas adjacent to roads and trails open to vehicles. Road closures also limit the amount of bird disturbance caused by wildlife observers and photographers. To limit disturbance to migrating waterbirds, the road around Lake Tewaukon and the trail around the south side of Sprague Lake will be closed to vehicles in October, November, and April. These roads will also be closed from December through March to limit winter wildlife disturbance which is discussed in the Wintering Wildlife Habitat Section. Walk-in angling access will be permitted to Lake Tewaukon (except the Point) and Sprague Lake year-round.

The Point Road will be closed to all public access (vehicles and foot traffic) if it becomes impassable due to snow conditions or on November 1 to limit winter wildlife disturbance. The staff will evaluate the disturbance to migratory waterbirds during peak migration periods for several years to determine if this road should be closed from October through April. This road could be gated, signed, and a news release can be used to notify the public.

In September, the Refuge is open to walk-in archery hunters and youth deer hunters. These activities generate less than 40 visitors a year and provide minimal disturbance to migrating birds. The Refuge is closed to all hunting during the peak fall migration period in October.

R2.11 Objective: Manage the Refuge as a protected resting and feeding area for migratory birds during the spring and fall migration periods.

Strategies:
- ✓ Manage Lake Tewaukon and Sprague Lake as open water rest areas for migratory water birds.
- ✓ Close Lake Tewaukon and Sprague Lake to boat traffic from October 1 through April 30 during the peak migration period.
- ✓ Close the road around Lake Tewaukon and the trail south of Sprague Lake to vehicles during the months of October, November, and April to reduce disturbance to migratory birds.
- ✓ During the primary waterbird fall migration period (October), close all hunting activities on the Refuge.
- ✓ Identify limited access areas to the public through signs, news releases, and pamphlets, and provide information to the public about the impacts of human disturbance to wildlife.
- ✓ Evaluate exceptions for public access for wildlife observation and photography during migration based on activities requested and their potential impacts to migrating birds.
- ✓ Evaluate disturbance to migratory waterbirds during the peak migration months of October and April and assess migratory bird responses to vehicles and angler visits on the Point Road. Close the Point Road during the months of October and April if disturbance is significant.

Nesting Birds and Other Breeding Wildlife

The nesting and rearing season for birds and other wildlife on the Refuge lasts from April through August. Wildlife utilize grassland, wetland, and tree and shrub habitats to reproduce and raise young. Providing areas of minimal human disturbance during this season was recognized by the planning team as important for wildlife survivability and production.

Currently, visitor use is primarily associated with the main Refuge road around Lake Tewaukon and the area east of County Road 12. That portion of the Refuge west of County Road 12 and the Sprague Lake Unit (except for Sprague Lake) are closed to public entry from April through August. It is recognized that disturbance occurs to wildlife and habitat during activities such as hiking, photography, and wildlife observation. These disturbances include trampling of vegetation, flushing of nesting birds, scattering young, and occasional death from vehicles. Approximately 15 percent of the Refuge is open to wildlife-dependent recreation during the nesting and reproductive season. Currently, Refuge use in this area is limited to driving the Lake Tewaukon road and fishing along the shoreline. Few visitors venture off established roads and trails into the grassland and wetland habitats. If an increase in this type of use occurs, a reevaluation of the use and possible re-zoning of open areas or the development of established walking/observation trails can mitigate impacts that may occur.

R2.12 Objective: Manage the Sprague Lake Unit (except for the Lake) and the area west of County Road 12 on the Tewaukon Unit as a closed area to the public from April through August to reduce disturbance to wildlife nesting and reproduction.

Strategies:

- ✓ Identify limited access areas to the public through signs, news releases, and pamphlets and provide information to the public about the impacts of human disturbance to wildlife.
- ✓ Evaluate exceptions for public access on closed areas based on activities requested and their potential impacts to nesting and reproducing wildlife.

Wintering Wildlife Habitat

On the Refuge, winter encompasses the months of December through March. Stress periods for wildlife are predominately associated with cold temperatures and snow depths which vary from year-to-year. In the winter of 1997, extreme weather, including 8 blizzards, over 100 inches of snow, and a severe ice storm in April, caused mortality in deer, pheasants, and other wildlife. Providing areas of minimal human disturbance during this season was recognized by the planning team as important for wildlife survivability.

Recreational pheasant hunting is permitted on the Refuge during the month of December and the beginning of January. Weather limits the number of hunters participating in this activity. If winter conditions are severe early and snow is deep, the Refuge has very few visits from pheasant hunters. Recreation during the rest of the winter is limited to ice fishing and access for ice fishing on Lake Tewaukon and Sprague Lake. Other user groups which have inquired about winter public use activities include cross-country skiers, ice skaters, dog sled users, and snowshoe users. These activities have not been allowed in the past due to the potential disturbance to wildlife and safety issues.

R2.13 Objective: Manage the Refuge (except for ice fishing on Lake Tewaukon and Sprague Lake) as a closed area from January through March to reduce disturbance to wintering resident wildlife.

Strategies:

- ✓ Close the road around Lake Tewaukon and the trail south of Sprague Lake to vehicles from December through March to reduce disturbance to wintering wildlife. That portion of the Lake Tewaukon road from County Road 12 east to the north boat ramp access road will remain open.
- ✓ Close the Point Road if it becomes impassable due to snow conditions or on November 1 to limit disturbance to wintering deer and for ice fishing safety. The Point Road will be re-opened in the spring when conditions are dry for vehicle access.
- ✓ Limit vehicle access (including snowmobiles) for winter ice fishing to specific areas on Lake Tewaukon (the north boat ramp, east boat ramp, and access from County Road 12). Limit vehicle access for winter ice fishing on Sprague Lake to the east and west boat ramps.
- ✓ Winter hiking, snowshoeing, ice skating, cross-country skiing, and other recreational activities not associated with recreational fishing access on Lake Tewaukon and Sprague Lake will not be permitted.
- ✓ Identify limited access areas to the public through signs, news releases, and pamphlets and provide information to the public about the impacts of human disturbance to wildlife.

Location	Closure Periods	Reason
Lake Tewaukon Road	October, November, and April December through March	Migratory Birds Wintering Wildlife
Sprague Lake Trail	October, November, and April December through March	Migratory Birds Wintering Wildlife
Point Road	When impassable or November 1 to when road is passable	Wintering Wildlife Ice Fishing Safety
Portion of Tewaukon Unit West of County Road 12	April through August January through March	Nesting and Breeding Wildlife Wintering Wildlife
Sprague Lake Unit excluding Sprague Lake	April through August January through March	Nesting and Breeding Wildlife Wintering Wildlife

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Endangered Species

R3 Goal: Contribute to the preservation and restoration of endangered, threatened, rare, and unique flora and fauna that occur, or have historically occurred in the area of Tewaukon National Wildlife Refuge.

With the delisting of the peregrice falcon from the Federal Endangered Species List, only the federally threatened bald eagle is known to occur or have been observed on the Refuge. Bald eagles are regularly sighted during the spring and fall migration periods.

Only two federally listed endangered species likely used the Refuge historically, the whooping crane and the gray wolf. These species have never been recorded on the Refuge since files have been kept. Records of whooping crane nests and young birds indicate that breeding birds formerly occurred in southeast North Dakota, but mostly in the more central region (Stewart 1975). Whooping cranes more likely only migrated through the Refuge. Historically, gray wolves were found throughout North Dakota and were known as plains wolves or buffalo wolves (U.S. Fish and Wildlife 1995). Gray wolves were extirpated from North Dakota through shooting, trapping, and poisoning but occasional sightings have been reported in this District since 1985.

Migratory Nongame Birds of Management Concern

In 1995, the Fish and Wildlife Service identified migratory nongame birds that were of management concern across the United States (U.S. Fish and Wildlife Service 1995). These species are of concern because of documented or apparent population declines, small or restricted populations or dependence on restricted or vulnerable habitats. The bird species that occur or may occur on the Tewaukon Refuge include: (*Nest on the Refuge)

Black tern *	Olive-sided flycatcher	Loggerhead shrike
Ferruginous hawk	Sedge wren *	Red-headed woodpecker
Northern harrier *	Baird's sparrow	Chestnut-collared longspur
Upland sandpiper *	Grasshopper sparrow *	

With the exception of the five bird species that nest on the Refuge, the other birds are seen only occasionally on the Refuge during migration. The northern harrier, upland sandpiper, and the grasshopper sparrow have been chosen as indicator species for the Tallgrass Prairie Management Approach. Population, breeding, and habitat information on these three indicator species are addressed in the Tallgrass Prairie Management Approach Section. Since little information exists about Refuge breeding populations of black terns and sedge wrens, the status of these species will best be addressed under the point count objective in the Refuge Migratory Bird Section.

Other Rare Species

Rare Butterflies

In 1996, Tim Orwig surveyed the Refuge native prairie sites for rare butterflies. Regal frittillary butterflies, and powesheik skippers were recorded on two Refuge sites. Both the regal fritillary and the powesheik skipper are found exclusively on native prairie sites. The larvae of these butterflies feed on native grasses and a variety of native forbs when they are adults. A list of the other butterflies observed are in Tim Orwig's 1996 report.

Since the health of prairie communities and the species diversity of the prairies has been previously identified in the Plan as a management objective, the following objective was developed as a method for evaluating native prairie diversity. Three rare butterflies, regal fritillary, powesheik skipper, and Dakota skipper were chosen as indicator species in the "A Habitat-Based Approach to Management of Tallgrass Prairies" (Schroeder and Askerooth 2000).

R3.1 Objective: Develop a Monitoring Plan to measure relative abundance of three rare butterflies in the six Prairie Focus Areas to provide feedback and information to the tallgrass prairie habitat management approach.

> *"Natural resource management is 90 percent managing the public and 10 percent managing the resource"*
> - Unknown

Public Use and Recreation

More than 30 million people visit national wildlife refuges every year. The vision for the future in Fulfilling the Promises (1999) states that:

> "The National Wildlife Refuge System of the next century will provide the American people a legacy of wildlife, a place where visitors are welcome, opportunities for stewardship and a system to appreciate."

The Refuge Improvement Act recognizes the importance of compatible wildlife-dependent recreation. The Act identifies hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation as the six priority public uses.

Given the long legislative history that encourages compatible wildlife-dependent public uses on refuges and the long history of wildlife-related public use on Tewaukon Refuge, several objectives were developed by the planning team to continue providing the six priority recreational uses.

R4 Goal: Provide recreational and educational opportunities for persons of all abilities to learn about and enjoy tallgrass prairie wetland ecosystem, the fish and wildlife found there, and the history of the Refuge in a safe and compatible manner.

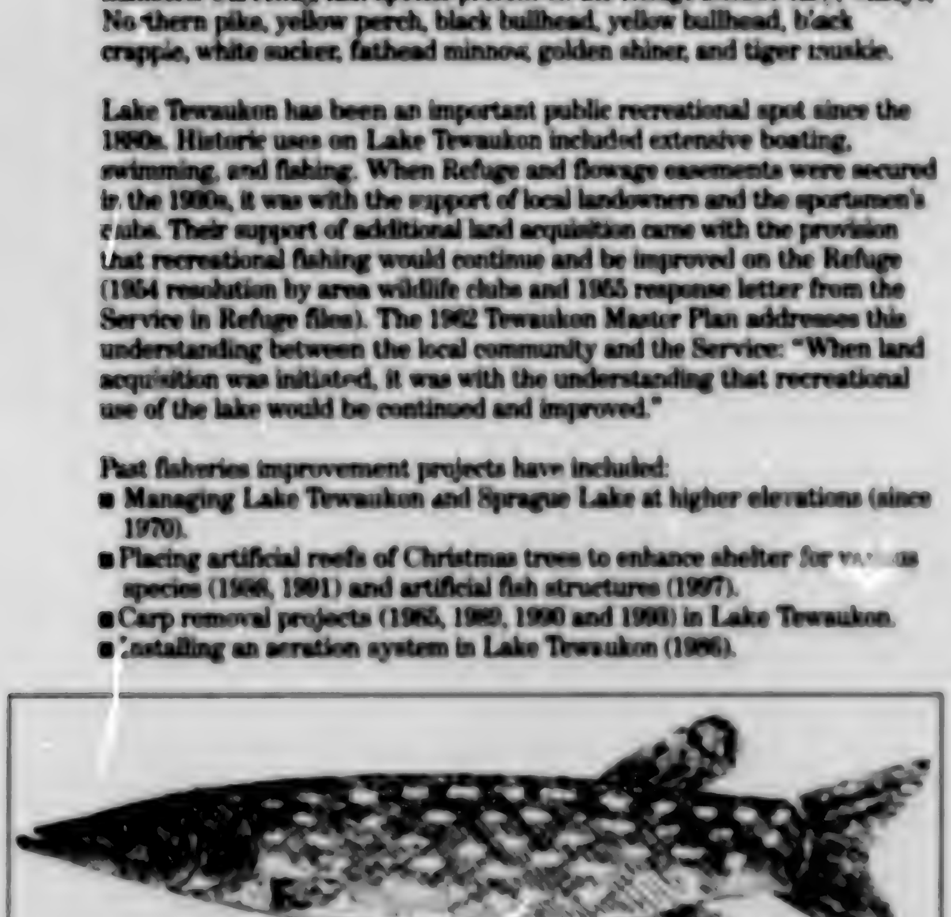
Fishing

Fish populations have been highly variable in Lake Tewaukon. In the 1940s, strong populations of northern pike, walleye, crappies, and perch were present. After carp became established in 1943, fishing steadily declined until 1955. Rough fish removal, heavy stocking, and minimum size limits for Northern pike and walleye, and low water conditions in Refuge pools have helped to improve desirable fish populations and limit carp numbers. Currently, fish species present on the Refuge include carp, walleye, Northern pike, yellow perch, black bullhead, yellow bullhead, black crappie, white sucker, fathead minnow, golden shiner, and tiger muskie.

Lake Tewaukon has been an important public recreational spot since the 1890s. Historic uses on Lake Tewaukon included extensive boating, swimming, and fishing. When Refuge and flowage easements were secured in the 1930s, it was with the support of local landowners and the sportsmen's clubs. Their support of additional land acquisition came with the provision that recreational fishing would continue and be improved on the Refuge (1954 resolution by area wildlife clubs and 1955 response letter from the Service in Refuge files). The 1962 Tewaukon Master Plan addresses this understanding between the local community and the Service: "When land acquisition was initiated, it was with the understanding that recreational use of the lake would be continued and improved."

Past fisheries improvement projects have included:

- Managing Lake Tewaukon and Sprague Lake at higher elevations (since 1970).
- Placing artificial reefs of Christmas trees to enhance shelter for various species (1988, 1991) and artificial fish structures (1997).
- Carp removal projects (1985, 1989, 1990 and 1993) in Lake Tewaukon.
- Installing an aeration system in Lake Tewaukon (1986).



Northern Pike, Cindie Brunner

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Lake Tewaukon and Sprague Lake are managed as open water migratory bird rest areas. Because they are large (Lake Tewaukon 1,000 acres and Sprague Lake 184 acres) and relatively deep (8 to 9 feet), they offer the best opportunity on the Refuge to provide recreational fishing. Though fish may intermittently occur in other Refuge pools, wetland management objectives developed to benefit migratory birds do not provide favorable conditions for fish (See Refuge Managed Wetland Section). Recreational fisheries will only be managed on Lake Tewaukon and Sprague Lake and all other Refuge pools will remain closed to recreational fishing.

The original compatibility determination completed in 1984, limited fishing to Lake Tewaukon and Sprague Lake. The compatibility determination was reviewed as part of this planning process and determined to be adequate, appropriate, and current (See Appendix G). Stipulations on fishing include closing the two lakes to boat fishing and portions of lakeshore roads during the spring and fall waterbird migration periods. (See Refuge Wildlife Disturbance Section.)

Currently fishing facilities on the two lakes include three boat ramps on Lake Tewaukon and two on Sprague Lake. An accessible fishing dock and ramp, outdoor rest rooms, picnic tables, picnic shelter and interpretational kiosks are available on Lake Tewaukon (See Map 9 through 12). A public use summary guide is available to anglers and describes Refuge specific regulations and opportunities.

A Refuge Fisheries Management Plan was completed for Lake Tewaukon and Sprague Lake for 1996-2006. This Plan discusses several ways to improve recreational fish population conditions in Lake Tewaukon and Sprague Lake. The following objective adopts those recommendations.

R4.1 Objective: Maintain populations of sport fish including northern pike greater than 25 kg/survey total biomass, walleyes greater than 20 kg/survey total biomass, and perch greater than 10 kg/survey total biomass in Lake Tewaukon and Sprague Lake in accordance with the 1996-2006 Refuge Fisheries Management Plan.

Strategies:

- ✓ Reduce population densities of carp to maintain a total biomass of less than 30 kg/survey in Refuge waters. (See CCP Nonnative Objective and Strategies).
- ✓ Work cooperatively with the Missouri River Fish and Wildlife Assistance Office and the ND Game and Fish Department to determine and implement fish stocking rates, harvest regulations, water management, monitoring of fish populations, and law enforcement.
- ✓ Maintain water levels at an average depth of approximately 9 feet in Lake Tewaukon and 8 feet in Sprague Lake.
- ✓ Maintain use of an aerator during October through March in Lake Tewaukon to help prevent the winterkill of fish species.

R4.2 Objective: Provide public fishing opportunities in Lake Tewaukon and Sprague Lake when compatible.

Strategies:

- ✓ Provide shore fishing opportunities on the two lakes year-round.
- ✓ Provide boat fishing opportunities on the two lakes from May 1 to September 30.
- ✓ Provide ice fishing opportunities on the two lakes during the winter and identify access points as described in the Refuge Wildlife Disturbance Section.
- ✓ Work cooperatively with the Missouri River Fish and Wildlife Assistance Office and the ND Game and Fish Department to stock the lake with fish for public fishing opportunity.
- ✓ Work cooperatively with the ND Game and Fish Department to conduct law enforcement patrols to ensure special regulation compliance and provide a quality experience for all visitors.
- ✓ Work cooperatively with local groups to maintain and improve fishing facilities including five boat ramps, an accessible fishing pier, and four public use areas (see Map 9 through 12) with rest rooms, picnic tables, and information kiosks.
- ✓ Identify open fishing areas to the public through signs, news releases, and pamphlets, and inform the public about Refuge regulations and opportunities.

Hunting

Tewaukon NWR is open for ring-necked pheasant and white-tailed deer hunting. Waterfowl and other migratory bird hunting conflicts with the Refuge purposes as an "inviolate sanctuary for migratory birds." Migratory bird hunting is available on the adjacent North Dakota State Game Management area and other State and Federal public lands in the District. A Refuge Hunting Regulations and Map pamphlet is available to hunters in the fall and describes Refuge specific regulations and opportunities.

The Refuge is open to youth gun hunters and bow hunters for white-tailed deer in September and the deer rifle permit season in November. Archery season for deer reopens in November after the deer gun season to reduce hunting group conflicts and provide for a more safe hunter experience. All other North Dakota State regulations apply. Refuge deer tags for the deer gun season are issued by the ND Game and Fish Department. The number of deer tags issued are based upon wintering deer populations (See Refuge Native Wildlife Section) and hunter density for safety reasons.

The Refuge is open to pheasant hunting after the close of the deer gun season in November through the end of the general State Season to reduce hunting group conflicts and migratory bird disturbance. Nontoxic shot is required. All other North Dakota State regulations apply.

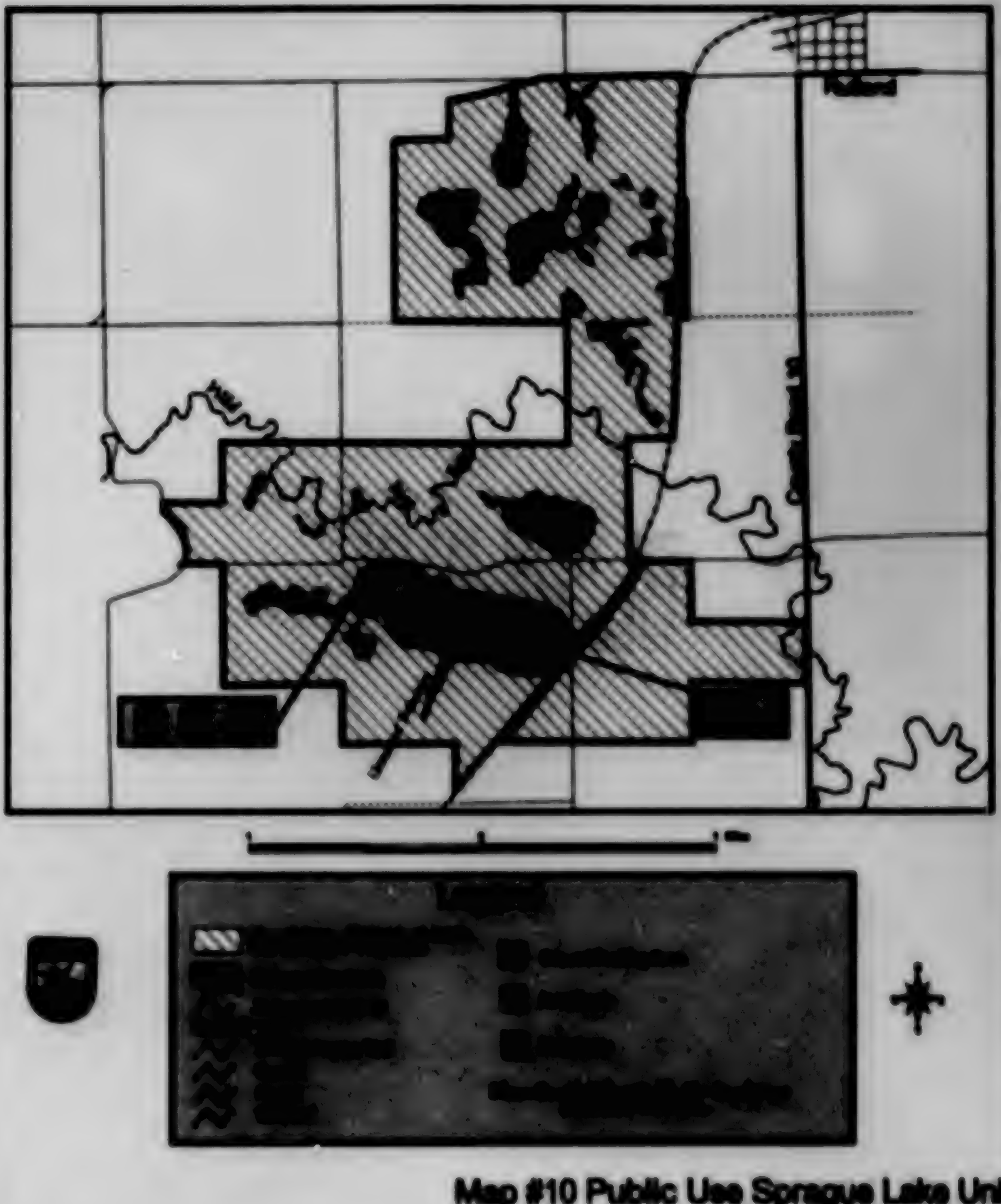
R4.3 Objective: Provide public opportunity for pheasant hunting in November and December after the fall waterfowl migration. Deer hunting opportunities will also be provided during the months of September, November, and December before and after the waterfowl migration.

Strategies:

- ✓ Continue to provide a youth deer gun season in September, archery deer hunting in September and December, and a deer gun season in November. Continue to provide a pheasant hunting season after the deer gun season in November and December.
- ✓ Work cooperatively with the ND Game and Fish Department to conduct law enforcement patrols to ensure special regulation compliance and provide a quality experience for all visitors.
- ✓ Work cooperatively with the ND Game and Fish Department to distribute deer gun permits and manage hunting seasons.
- ✓ Maintain parking areas and provide maps and pamphlets to provide information about Refuge hunting regulations and access.
- ✓ Identify open hunting areas to the public through signs, news releases, and pamphlets and inform the public about Refuge regulations and opportunities.

Sprague Lake Unit

Sargent County, North Dakota



Map #10 Public Use Sprague Lake Unit

(May - August)

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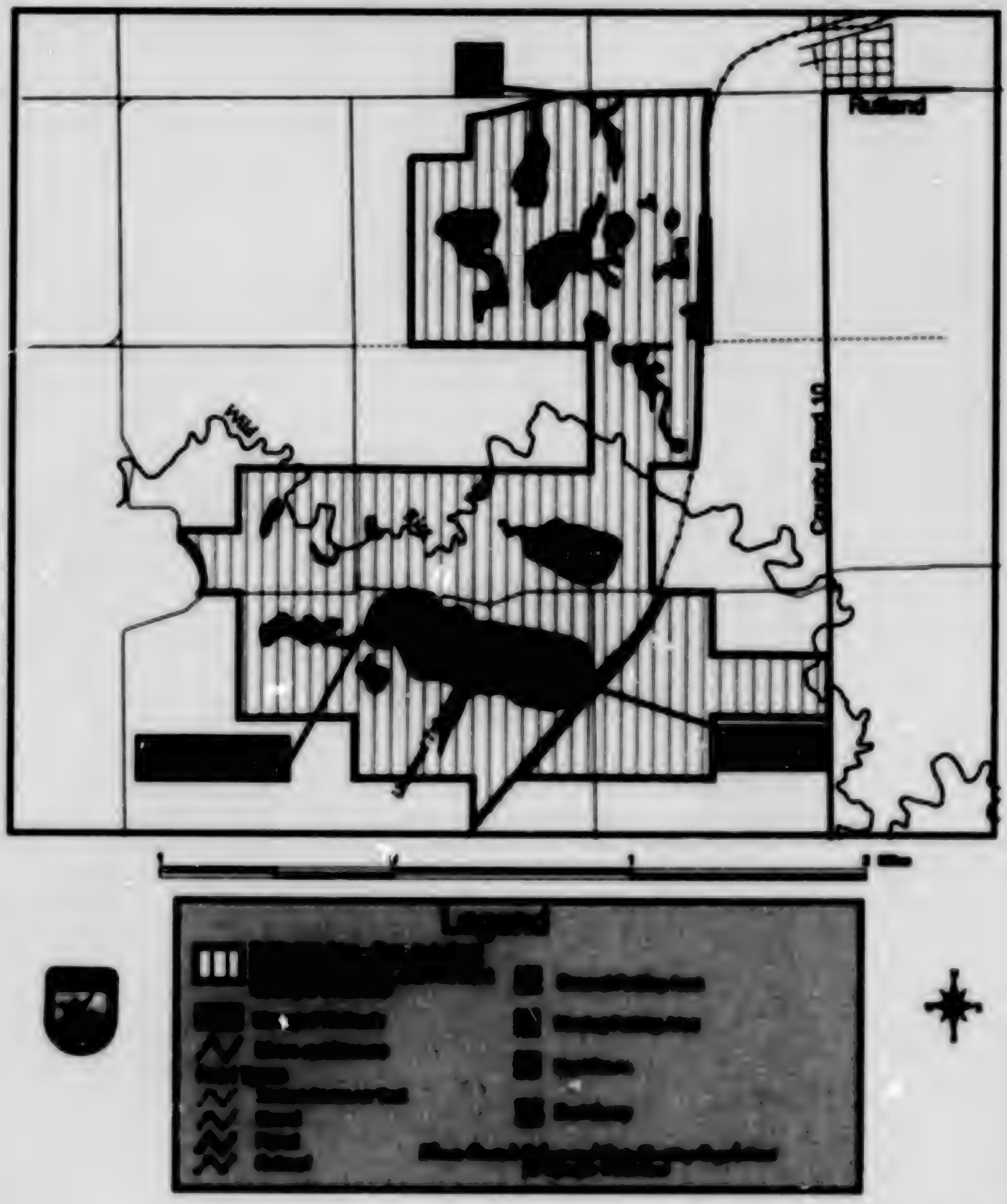
Sprague Lake Unit

Sargent County, North Dakota



Map #12 Public Use Sprague Lake Unit
(September - April)

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Trapping

The Refuge had recreational trapping prior to 1998; however, the interest in trapping decreased due to the fur prices which made it difficult to justify the staff time for only one interested trapper. If fur price and interest increases, this use will be reevaluated. Recreational trapping is available on all waterfowl production areas in Ransom, Richland, and Sargent Counties.

Wildlife Observation and Photography

Wildlife observation and photographic opportunities are available from May through September on the Refuge east of County Road 12 (Map 9 through 12). Access to closed areas of the Refuge are by request only.

R4.4 Objective: Provide public opportunity for wildlife observation and photography on the east side of County Road 12 from May through September.

Strategies:

✓ Maintain the 8-mile Prairie Lake auto tour around Lake Tewaukon to ensure a safe and quality experience from May 1 through September 30.

✓ Develop an accessible wildlife observation platform and interpretive hiking trail on the Refuge.

✓ Identify open wildlife viewing and photography areas to the public through signs, news releases, and pamphlets and inform the public about Refuge regulations and opportunities.

Interpretation

Currently, the Refuge has a small visitor center in the administrative headquarters. Three exhibits have been developed and installed at this site. Seven kiosks with information panels are located at the visitor center and the four public use areas and on the Lake Tewaukon overlook. A Prairie Lake Auto Tour has been developed around Lake Tewaukon and a short accessible prairie walk is located adjacent to the headquarters. A variety of pamphlets are available about the Service, the Refuge System, the Tewaukon Refuge, and other natural resources at the visitor center and kiosks.

R4.5 Objective: Promote public awareness and advocacy of Refuge resources and management activities that conserve the regions' natural, cultural, and historical resources in the visitor center and use signs, exhibits, pamphlets, and programs elsewhere on the Complex.

Strategies:

✓ Develop a new Refuge general brochure, wildlife list (including mammals, amphibians, and butterflies), and a Dakota Tallgrass Prairie Project brochure.

✓ Maintain and update current brochures when necessary (including Public Use Summary and Map, Hunting Regulations and Map, Bird List, Refuge Map, and Prairie Lake Auto Tour).

✓ Provide visitor information and access to the Refuge visitor center on weekends during the months of July, August, September, October, and November which coincides with increased visitation.

✓ Develop three interactive, accessible interpretive exhibits for the visitor center on tallgrass prairie, snow geese, and a Refuge orientation map.

✓ Expand the visitor center for more informational exhibits, space for visitors, and special events.

✓ Develop an accessible tallgrass prairie trail in a managed prairie site adjacent to the Refuge visitor center to promote awareness about tallgrass prairie values and management efforts.

Environmental Education

Over the last 10 years, the Refuge staff has aspired to develop an environmental education and outreach program on a local and statewide scale. Refuge staff have worked to educate and inform the public about a variety of natural resources, Refuge management activities and programs, and local, regional and national fish, wildlife, and habitat issues.

R4.6 Objective: Environmental education programs and activities will focus on the native prairie/wetland ecosystem and Refuge natural, cultural, and historic resources. These activities will be designed to develop awareness and promote advocacy for Refuge resources and management activities.

Strategies:

- ✓ Present a program at each of the 15 local schools once a year to educate young people about natural resources and issues and promote an understanding of the U.S. Fish and Wildlife Service mission and purpose of the Tewaukon Complex.
- ✓ Continue to host an annual Tewaukon Field Day with the ND Extension Service, Cogswell Gun Club, and Tewaukon Rod and Gun Club as partners.
- ✓ Coordinate and promote the North Dakota Jr. Duck Stamp Program with several wildlife groups and other partners.
- ✓ Participate in three County conservation tours with County Soil Conservation Districts each year.
- ✓ Conduct or host at least five school and group tours per year.

Public Outreach

The staff at the Refuge has worked to improve the public outreach program by increasing news releases, programs, tours, presentations to local and interested groups, attending meetings, participating in local, County, and State activities, and briefing congressional offices.

R4.7 Objective: Develop awareness and foster an understanding of Complex resource issues and management activities through public outreach that develops Service and Refuge advocacy.

Strategies:

- ✓ Visit local wildlife and community groups two times per year to provide information on Refuge activities, management, and issues.
- ✓ Visit with congressional offices annually to keep them up-to-date on Refuge activities, management, and issues.
- ✓ Develop and maintain a Tewaukon Complex Website.
- ✓ Participate in one County fair each year.
- ✓ Host a Refuge Open House every year.
- ✓ Write 12 news releases for local and State newspapers annually. Conduct television and radio spots upon request.

Cultural Resources

The majority of the cultural resource information for the Refuge was complied in Jackson and Toom's 1999 report, "Cultural Resources Overview Studies of the Tewaukon National Wildlife Refuge, Sargent County, North Dakota and the Waubay National Wildlife Refuge, Day County, South Dakota." Additional information can be found in the report: "Archaeological Test Excavations at Lake Tewaukon (32SA211): A Protohistoric Occupation Site in Southeastern North Dakota" by Thomas W. Haberman, 1978, University of North Dakota Historic (A.D. 1780 to present). Sites on the Refuge include the Langie family cemetery on the western shore of Lake Tewaukon and the campsite of General Sibley's military troops at Camp Parker on July 2 and 3, 1863, on the eastern shore of Parker's Bay.

Less than 5 percent of the Refuge has been surveyed for cultural resources. The majority of the cultural sites have been documented in gently sloping to moderately-well to well-drained soils, especially along lakes. These areas offered the best sites for human occupation. Other areas are located on the Refuge with similar soil and site characteristics that have not been surveyed and could be targeted.

Recommendations for the cultural resources at the Refuge were compiled from the two cultural resource reports mentioned previously. These recommendations include a comprehensive evaluation of the Refuge for cultural resources, protection of three existing sites from lake shore erosion (and needed periodic test excavation monitoring), and nomination of several sites for the Natural Register of Historic Places.

Objectives were developed to protect, inventory, and inform the public about Refuge cultural resources.

R4.8 Objective: Preserve and protect existing cultural resources and future discoveries of archaeological sites when they are discovered on Refuge lands.

Strategies:

- ✓ Continue to coordinate cultural resource inventories on construction and development sites. Work cooperatively with U.S. Fish and Wildlife Service archaeologist and State Historical Preservation Office prior to all proposed actions.
- ✓ Conduct a Class II cultural resource survey (sample inventory of project site for distribution and density over a larger area) on 1/3 of the Refuge areas that were not previously surveyed.
- ✓ Coordinate and develop an agreement with the Sisseton-Wahpeton Sioux tribe for any discovery of human remains.
- ✓ Provide a protective cabinet to preserve archaeological resources recovered in the University of North Dakota survey on the Refuge.

R4.9 Objective: Increase public awareness of the significance of the cultural and archaeological resources located on Tewaukon Refuge Complex.

Strategies:

- ✓ Maintain Tewaukon's artifact display and interpretive panels.
- ✓ Develop additional interpretive materials for new information and sites.

Partners

The National Wildlife Refuge System recognizes that strong citizen support benefits the System. These benefits include the involvement and insight of citizen groups in Refuge resource and management issues and decisions, which helps managers gain an understanding of public concerns. Partners yield support for Refuge activities and programs, raise funds for projects, are activists on behalf of wildlife and the Refuge System and provide support on important wildlife and natural resource issues. In Fulfilling the Promises, the Service identified the need to forge new and nontraditional alliances and strengthen existing partnerships with States, Tribes, nonprofit organizations and academia to broaden citizen and community understanding of and support for the National Wildlife Refuge System.

A variety of people including but not limited to scientists, birders, anglers, hunters, ranchers, farmers, outdoor enthusiasts, and students have a great deal of interest in Tewaukon Complex's management, wildlife species, and habitats. This can be evidenced by the number of visitors to the Refuge and the partnerships that have been developed which are listed in Appendix I. The Complex staff will strive to maintain these partnerships. New partnerships will be formed with interested organizations, local civic groups, community schools, Federal and State governments, and other civic organizations if funding and staff are available.

R5 Goal: **Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive prairie/wetland ecosystem in which the Tewaukon Refuge serves as a model and demonstration area.**

R5.1 Objective: Create opportunities for new and maintain existing partnerships among Federal, State, local agencies, organizations, schools, corporations, communities, and private landowners to promote the understanding and conservation of ecosystem and Refuge resources, activities, and management.

Strategies:

- ✓ Maintain coordination with the ND Game and Fish Department to conserve, protect, and manage lands for wildlife.
- ✓ Work with the Bureau of Reclamation and area landowners on the Kraft Slough National Wildlife Refuge acquisition project. Once the land is transferred to the U.S. Fish and Wildlife Service, develop a management plan for the area.
- ✓ Implement and support the goals and objectives of the Drift Prairie Wetland Enhancement Project through the North American Wetlands Conservation Act.
- ✓ Continue to support and coordinate the Refuge Fishing Tournament each year with the Tewaukon Rod and Gun Club and the Cogswell Gun Club.
- ✓ Continue to support and coordinate the Tewaukon Field Days each year with the ND Extension Service, Tewaukon Rod and Gun Club, the Cogswell Gun Club, and local 4-H groups.
- ✓ Identify and promote new partnerships to support restoration, protection, enhancement, and preservation of tallgrass prairie and its flora and fauna.

Volunteer Program

The 1998 Volunteer and Community Partnership Enhancement Act promotes understanding and conservation of fish, wildlife and plants, and cultural and historical resources of the Refuge. The purposes of the Act are to 1) encourage the use of volunteers to assist in the management of refuges; 2) to facilitate partnerships between the Refuge and nonfederal entities; 3) to promote public awareness of the resources of the Refuge and public participation in the conservation of the resources; and 4) to encourage donations and other contributions.

R5.2 Objective: Foster a volunteer program that supports Complex goals and objectives and provides a quality experience for volunteers.

Strategies:

✓ Utilize a variety of sources to recruit volunteers with diverse experiences.
✓ Provide room and board for volunteers while they are working at the Complex.

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Tewaukon Wetland Management District

Purpose

The purpose for the Tewaukon Wetland Management District is determined by the legislation that authorized Waterfowl Production Area and wetland easement acquisition. Lands were acquired primarily to benefit migratory birds.

- For District lands acquired under the Public Law 85-585, dated August 1, 1958, the purpose of the acquisition is to assure the continued availability of habitat capable of supporting migratory bird populations at desired levels.
- For District lands acquired under the Migratory Bird Hunting and Conservation Stamp Tax, 16 U.S.C. § 718, as amended, for the purpose: "...as Waterfowl Production Areas" subject to "...all of the provisions of such Act [Migratory Bird Conservation Act] ... except the inviolate sanctuary provisions ..." 16 U.S.C. § 718© (Migratory Bird Hunting and Conservation Stamp Tax).

Since March of 1996, North American Wetlands Conservation Act (NAWCA) funds have been used to acquire grassland easements in the three County Tewaukon District. Grassland easements are acquired only with companion wetland easements.

- The North American Wetlands Conservation Act, Public Law 101-233 - December 13, 1989, as amended in 1990, 1994, and 1998 is an Act to conserve North American wetland ecosystems and waterfowl and other migratory birds and fish and wildlife that depend upon such habitats.

Farmers Home Administration (FmHA) conservation easements have also been transferred to the Complex for administration.

- Conservation easements are executed by quitclaim deed through the State Executive Director of the Farm Service Agency, its successors or assigns, for the United States Department of Agriculture. The easements are under the authority and in furtherance of the provisions of Federal law, including sections 331 and 335 of the Consolidated Farm and Rural Development Act (7 U.S.C. 1981, 1985), Executive Order 11990 providing for the protection of wetlands, and Executive Order 1198 providing for the management of floodplains, and section 1314 of the Food Security Act of 1985 authorizing the Farmers Home Administration to grant easements for conservation purposes.

As part of the planning process, the Complex staff and planning team reviewed past national, regional, and Complex planning documents and current planning guidance. Using the legislation and plans, the planning team developed the following District vision statement.

Vision

> The Tewaukon Wetland Management District will be preserved, restored, and enhanced as a part of the tallgrass prairie wetland ecosystem capable of supporting habitat for migratory birds and other native wildlife for the benefit of present and future generations. The District will provide a learning environment where a diversity of tallgrass prairie, wetlands, plants, wildlife, and natural processes can be found. Provide opportunities where people can enjoy wildlife associated recreation.

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Description of the District

The Tewaukon Wetland Management District is comprised of over 14,000 acres of fee Waterfowl Production Areas (WPA) (Map 2), 35,000 acres of wetland easements, over 10,000 acres of grassland easements, and 112 wetland and 45 grassland acres in FmHA easements in Ransom, Sargent, and Richland Counties.

Waterfowl Production Areas

The majority of Waterfowl Production Areas in the Tewaukon Wetland Management District were purchased in the 1960s. WPAs are owned in fee title by the Service. Historically, acquisition of WPAs focused on larger semipermanent wetlands, and often, very little associated upland was included in the tract. As grassland cover was converted to cropland, the Service recognized the importance of purchasing uplands adjacent to wetlands for waterfowl production. When considering a WPA purchase from willing sellers, the Service ranks sites with native prairie, rare wildlife and plant species, a diversity of temporary and semipermanent wetlands, and areas near or adjacent the Refuge or another WPA as higher priorities for acquisition. Currently, the Service purchases on average one WPA in this District every three years.

Wetland Easements

The Small Wetlands Acquisition Program was authorized by Congress in 1958 by an amendment to the Migratory Bird Hunting and Conservation Stamp Act. The purpose of the program is to ensure long-term protection of waterfowl breeding habitat, primarily on wetlands in the Prairie Pothole Region of the United States. Wetland easements are perpetual and prohibit filling, leveling, draining, and burning of wetlands under easement. Wetland easements are a real property interest the Service has purchased from a willing landowner and are a permanent fixture to the land title. The land remains in private ownership. Since 1962, when the Wetlands Program began, the Service has acquired a perpetual real property interest in more than two million wetland acres for waterfowl production in the Great Plains states.

Grassland Easements

Conversion of grasslands to cropland has generated a need for upland habitat protection adjacent to wetlands. The loss of upland nesting cover and plant foods have reduced the value and productivity of wetlands for nesting waterfowl and their broods, and other migratory birds and wildlife. Grassland easements, like wetland easements, are perpetual easements that protect both existing and restored grasslands. The purposes of the perpetual grassland easement program are: to improve and protect the water quality of wetlands, maintain upland nesting habitat for ground nesting birds, protect highly erodible soils, and provide an alternative to the purchase of uplands in fee title, leaving land in private ownership. Grassland easements are real property interests that the Service purchases from landowners to prohibit any alteration of permanent grassland cover including cropland conversion or development, and haying or mowing until after July 15. Grazing is not prohibited or regulated under the grassland easement. Funding for grassland easements comes from a variety of sources including Migratory Bird Hunting and Conservation Stamp Act (with Governor approval), NAWCA grants, and Land and Water Conservation Funds.

ND FmHA Conservation Easements

These Conservation Easements were developed by the United States Congress under the Consolidated Farm and Rural Development Act of 1985 to help farmers reduce their debt load on farmland and to protect natural resources. The easement prohibits farming, mowing, haying, burning, filling, dumping, wood cutting, draining, or altering vegetation (includes grazing) on easement lands. Some wetlands on FmHA tracts have less restrictive easements that only prohibit draining, filling, leveling, or burning. Currently, the Tewaukon District has six FmHA conservation easements.

Waterfowl Production Areas

Management on fee WPAs is limited by funding, staff time, and the availability of cooperators. To efficiently maximize budgets and time, the planning team divided the WPAs into three priority levels: high, moderate, or low. The criteria used to determine a WPA's ranking was size of the tract, potential waterfowl pair densities shown on the Thunderstorm Map (See Map 13), and those with unique resources (i.e., tallgrass prairie, rare plants, and wildlife). A breakout of the priority level criteria for WPAs is as follows:

High Priority Level WPAs
- Over 160 acres in size
- Attract ducks 97 to 117 pairs/square mile (red) or 80 to 97 (yellow) on the Thunderstorm Map (Map 13)
- Has unique resources (tallgrass prairie areas)

Moderate Priority Level WPAs
- Between 100 to 160 acres in size
- Attract ducks 54 to 79 pairs/square mile (dark green); 37 to 53 pairs/square mile (light green) on Thunderstorm Map (Map 13)
- Unique resources (native prairie)

Low Priority Level WPAs
- Under 100 acres in size
- Attract ducks 36 pairs/square mile (grey) to anything below 18 pairs/square mile (blue) on Thunderstorm Map (Map 13)
- Access and management potential low

All Tewaukon District WPAs were placed in these three priority levels and are listed in Appendix L and shown on Map 14.

Some management and activities would continue on all of the WPAs regardless of their priority levels. Those include:
- All WPAs will be open to hunting, fishing, and trapping according to North Dakota State regulations. All other public activities will require a Special Use Permit and will be evaluated to determine if they are compatible with District purposes.
- All border fences and signs will be maintained.
- Weed control will continue on all tracts.
- All WPAs would continue to receive law enforcement protection of resources and public safety.
- Roadside mowing will be done by October 1 according to State regulations.

The differences in habitat management for each of the priority levels are outlined in the objectives.

Many of the District habitat management, wildlife, and public use goals and objectives are similar to Refuge goals and objectives. Much of the supporting text for these goals and objectives is also similar. Supporting text and historical background for each section can be found in the Refuge portion of the Plan unless they are specific to the District.

Habitat Management

D1 Goal: Preserve, restore, and enhance the ecological diversity of native flora, other grasslands, and wetlands within the tallgrass prairie wetland ecosystem.

Grasslands

Native Prairie

Approximately 3,100 acres of native prairie are scattered on various Waterfowl Production Areas. Many of these areas were inaccessible for agriculture because they are sandy, rocky, or wet. Historically, management of these areas has consisted of some haying and limited grazing and fire. Disturbance events occurred infrequently leaving the majority of the native prairie tracts in a degraded condition. Nonnative plants such as smooth brome, Kentucky bluegrass, leafy spurge, Canada thistle, Russian olive trees, and sweet clover have invaded the sites.

The primary reason native prairie is not in better condition is the lack of periodic disturbance (ND Ecological Services Botanist, Kathy Martin 1990; Barbour et al. 1987; Duebbert et al. 1981). See Refuge section on native prairie for further discussion.

Several objectives were developed by the planning team to manage and preserve native prairie sites.

D1.1 Objective: Preserve, restore, and enhance diverse native floral communities so that greater than 75 percent of the plant species composition is composed of climax species on all native tallgrass prairie tracts on WPAs. (Refer to Heidel's Classification 1986 of floral communities of the tallgrass prairie ecosystem and desired indicator species in the Native Prairie Refuge Section.)

Strategy:

- ✓ Develop a Monitoring Plan for native prairie on high priority level WPAs to determine species composition and relative abundance.

> *"The most remarkable features of this region are the intervals of level prairie....where the horizon is as unbroken as that of a calm seas...the long grass...bending gracefully to the passing breeze as it sweeps along the plain, gives the ideas of waves, and the solitary horseman on the horizon is so indistinctly seen as to complete the picture by the suggestion of a sail..."*
>
> - John Lambert, topographer, report to Governor Stevens on a expedition from the Mississippi River to the Columbia River.

Enhancing Native Prairie

Research outlined under the native prairie section in the Refuge portion of the CCP (See Refuge Habitat Grassland Section for more information) helped the planning team develop the next objective that addresses the management of contiguous blocks of grassland cover in the District for the benefit of grassland nesting migratory birds and prairie butterflies. Three sites were chosen to focus our grassland management. These sites were selected because they contained over 160 acres of upland habitat, have existing native prairie, were WPAs in the high priority level, had existing or potential for populations of native prairie butterflies, and had access for management. The tree rows on the Gunness and Gainer WPAs are at the fringes of the grasslands and, at this time, no plans exist to remove them. Several tree rows and individual trees exist on the Hartleben WPA. A unit of 160 acres or greater will be selected and, for now, only trees from this area will be removed. Under management, these prairie pieces should support a diversity of flowering plants needed by prairie dependent butterflies, one of our indicator species. If this management approach proves to be an effective method of habitat management and if additional funds and staff become available, the management will be expanded to additional high priority level WPAs in the District.

D1.2 Objective: Manage three WPAs as Prairie Focus Areas (Hartleben/Auer WPA, Gainer WPA, and the Gunness WPA) (Map 14): 1) to achieve an area of contiguous grassland (greater or equal to 160 acres) that is greater than 30 meters from woody vegetation (greater than 1 meter tall); 2) contain a variety of vegetative heights on the area with 20 percent in each of the following categories: 0 to 10 cm; 10 to 20 cm; 20 to 30 cm; 30 to 60 cm; greater than 60 cm; 3) to increase native floral diversity so that greater than 75 percent of the vegetative composition is composed of indicator species of the dry mesic tallgrass, central mesic tallgrass prairie, wet prairie, mesic tallgrass prairie climax communities (Heidel 1986).

Strategies:

- ✓ Provide the critical limiting habitat factors outlined in the "Habitat-Based Approach to Management of Tallgrass Prairie" (Schroeder and Askerooth 2000) for a variety of vegetative heights, and no woody vegetation greater than 1 m tall on the three WPAs. Include specific management details of these areas in a step-down management plan.
- ✓ Develop a detailed Monitoring Plan for the three WPAs.
- ✓ Annually evaluate the vegetation using methods and techniques developed in the Monitoring Plan for the three WPAs and apply appropriate management tools (prescribed burning, mowing, grazing, interseeding, chemical treatment, etc.) as appropriate to provide the limiting habitat requirements for migratory grassland birds and rare butterflies.

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> *"Within one human lifetime, the prairies have passed from wilderness to become the most altered habitat in this country and one of the most disturbed, ecologically simplified and over-exploited regions in the world. The essence of what we risk losing when the grasslands are destroyed is not a species here or a species there, but a quality of life, the largeness and wildness that made this country remarkable."*
> - Adrian Forsyth, Ecologist

Protecting Native Prairie

Historically, an estimated 4,750,000 acres of tallgrass prairie was found in North Dakota. Currently, only 275,000 acres of tallgrass prairie remain, which is a 99 percent decline. An estimated 118,700 acres still remain in the Tewaukon District. The U.S. Forest Service manages 70,000 acres of land at the Sheyenne National Grasslands, the largest contiguous tract of native prairie (approximately 50,000 acres) in the District. The Service owns in fee title approximately 3,700 acres of native prairie in Ransom, Sargent, and Richland counties, and the Nature Conservancy owns 1,100 acres of native prairie in Ransom county. The remaining 60,900 acres are predominately in private ownership and have been identified in the 1998 report from the North Dakota Natural Heritage Program survey of tallgrass prairie in Sargent, Ransom, and Richland Counties. Currently, the Service has protected over 10,000 acres of tallgrass prairie through grassland easements from willing sellers with two NAWCA grants. Priority under NAWCA grants is given to native prairie tracts with good wetland complexes or unique and rare resources. Landowner demand for grassland easements has been high and a need exists for more funding. Currently, a Dakota Tallgrass Prairie Project is being considered by the Service for funding of grassland easements and fee title acquisition through the Land and Water Conservation Act. This project includes the tallgrass prairie region in both North and South Dakota. The Dakota Tallgrass Prairie Project, described in the Dakota Tallgrass Prairie Environmental Assessment, targets tallgrass prairie remnants that do not have high densities of associated wetlands.

D1.3 Objective: Through a combination of voluntary partnerships, easements, and fee title land acquisition, preserve the remaining estimated 60,900 acres of existing native prairie tracts within the tallgrass prairie ecosystem to provide nesting areas for grassland nesting birds and protection for unique and rare plant and animal communities.

Strategies:
- ✓ Work cooperatively with the ND Heritage Program to identify remaining tracts of native prairie within the Red River Watershed.
- ✓ Work cooperatively with County commissioners to improve their recommendations to the Governor for State approval of fee title purchases of grassland habitat from willing sellers.
- ✓ Investigate and develop new funding sources (i.e., Dakota Tallgrass Prairie Project) for fee title and easement purchases. An estimated $5 million for easement offers will be needed to accomplish this objective.

Under the National Wildlife Refuge System Administration Act, 16USC 668dd, the U.S. Fish and Wildlife Service has the authority to enforce the provisions of grassland easements (no conversion of grassland cover and no haying or mowing before July 15). The following objective was developed to ensure that grassland easement interests are protected.

D1.4 Objective: Protect all grassland easement real property interests from development or conversion in Ransom, Richland, and Sargent Counties.

Strategies:
- ✓ Annually monitor all grassland easement tracts for violations and work with landowners to correct any violations.
- ✓ Work cooperatively with landowners to develop grassland management plans and guidelines and provide technical assistance for grassland leases to promote healthier grasslands.

Introduced/Planted Cover

Dense Nesting Cover

The District has approximately 1,800 acres in dense nesting cover (DNC) on WPAs. Historically, haying has been the predominate management tool to maintain the fields. After 10 to 15 years, the fields have been broken up and farmed for approximately three years, then replanted. The following objectives have been developed to manage these sites.

D1.5 Objective: Maintain 30 percent of DNC fields on High Management Priority WPAs and 10 percent on Moderate Management Priority WPAs with 7.87 inches (2 decimeters) observation obscurity to provide optimal nesting habitat for waterfowl.

Strategy:

✓ Develop a plan for DNC fields in the step-down Monitoring Plan to annually evaluate DNC fields and then apply management tools (prescribed burning, haying, farming, grazing, or interseeding) as appropriate.

Planted Cover

There are approximately 1,800 acres of nonnative grass (smooth brome and Kentucky bluegrass), 82 acres of cropland, and 1,900 acres of warm seeded native grass (3 to 4 species) on the District. The majority of the cropland is in the form of food plots maintained by partners under the Adopt-A-WPA program on the Klefstad, Asche, and Smith WPAs. These fields will be converted to a more diverse native plant community as opportunity and funding become available.

D1.6 Objective: Convert 400 acres of tame grass, cropland, and warm season native grass plantings on High Management Priority WPAs and 150 acres of Moderate Management Priority WPA fields to a diverse native floral community to develop larger contiguous blocks for migratory bird species and other prairie wildlife.

Strategy:

✓ Develop site specific restoration plans, funding sources, and a Monitoring Plan. Then begin restoration efforts. Apply management tools (prescribed burning, mowing, grazing, farming, interseeding, chemical treatment, etc.) where appropriate.

Wetlands

Very little data has been collected on WPA wetlands. A variety of agricultural operations (cultivation, herbicide application, etc.) take place on sites that are hydrologically related to WPA wetlands. Without baseline data, it is difficult to determine if these activities pose any threats to wetlands. In addition, water management projects and irrigation in the vicinity of WPAs may be affecting the hydrology of these wetlands.

The following objective was developed to help managers evaluate the impacts activities outside WPAs have on wetlands.

D1.7 Objective: Protect the quality and health of all prairie wetlands to preserve their natural productivity, longevity, and function on WPAs.

Strategy:
- ✓ Gather baseline information on existing wetland conditions on 10 percent of the High priority WPA wetlands, determine monitoring parameters, and identify external threats.

Water Rights

The only water control structure located on a Waterfowl Production Area is on the Gainor WPA in Sargent County. The structure is located adjacent to a legal drain that runs through the northern section of the WPA. The structure is used to hold water back in the spring in a large wetland. Currently, no State recognized water rights exist for Waterfowl Production Areas.

D1.8 Objective: Clarify the legal mechanism to acquire water rights on the Gainor WPA.

Protecting Wetlands

It is estimated that approximately 60 percent of the original wetland acreage has been drained in North Dakota (Tiner 1984). The primary drainage comes from surface ditches constructed to dry land out for agricultural production (Tiner 1984). Another threat to wetlands is the gradual siltation of basins caused by soil erosion from adjacent cropland and cultivation of entire wetlands (Kantrud et al. 1989). Herbicide and insecticide use also has the potential to highly impact wetland-dependent wildlife populations by eliminating food and cover (Hudson et al. 1984; Hill and Camardese 1986). Despite the impacts to wetlands that are caused by agricultural production, wetlands in farm fields are important to wetland-dependent wildlife. Given this background, the following objectives were developed for wetland acquisition. Priority tracts for wetland acquisition (fee title) will include parcels of at least 80 acres of uplands, tracts adjacent to WPAs, and sites with a variety of temporary and seasonal wetlands.

D1.9 Objective: Protect an average of 100 acres/year of wetland habitat through easements or fee title purchase from willing sellers for waterfowl and other migratory birds.

Strategies:
- ✓ Identify high priority tracts in the District using the Thunderstorm map and other tools.
- ✓ Work cooperatively with County commissioners to improve their recommendations to the Governor for State approval of fee title purchases of wetland habitat and associated uplands from willing sellers.

Under the National Wildlife Refuge System Administration Act, 16USC 668dd, the U.S. Fish and Wildlife Service has the authority to enforce the provisions of wetland easements (draining, filling, leveling, or burning of wetlands). This objective discusses the Service's intention to protect the real property interest that was acquired when the easements were purchased.

D1.10 Objective: Protect all wetland easement real property interests from development, draining or conversion in Ransom, Richland, and Sargent Counties.

Strategies:

- ✓ Annually monitor, through aerial and ground checks, all wetland easements for violations.
- ✓ Work cooperatively with landowners to correct drain, fill, and burning violations.
- ✓ Evaluate the impacts of water management and irrigation projects affecting surface and groundwater on easement wetlands.

Protecting Fens

A fen, also called an alkaline bog, is a wetland primarily composed of organic soil material (peat or muck) that takes thousands of years to develop. Surface water is sometimes lacking although the bottom soils are saturated by alkaline groundwater seepage (Stewart and Kantrud 1972). Fens usually have a pH of 4.0 - 7.5 and are dominated by grasses, especially sedges (Crum 1988). Common plant species found in fens are *Carex aquatilis* (sedge), northern reedgrass, broad-leaved cattail, softstem bulrush, hoary willow, and fowl mannagrass (Stewart and Kantrud 1972). Fens are extremely rare and occupy less than 1 percent of the wetlands in the nation and are usually small in size. No fens are identified on District lands. Since these wetland types are so rare, the following objective was developed to provide protection for these sites.

D1.11 Objective: Identify and protect existing fens in the District through easements, fee title purchases from willing sellers, and cooperative agreements with private landowners.

Strategy:

- ✓ Work cooperatively with the ND Heritage Program, other interested groups or individuals and landowners to identify and protect existing fens in the District.

Riparian Zones

Riparian zones can be described as that portion of the land that is located adjacent to a stream, river or body of water. The band of vegetation that grows in the riparian zone is influenced by the presence of water in the channel. Three major rivers are in the District: the Red River of the North, Wild Rice River, and the Sheyenne River. Several smaller creeks and natural drainages are associated with these Rivers. Riparian vegetation varies along these areas from tall cottonwood trees to willows and grasses. Most of the riparian zones in southeast North Dakota are farmed to the river banks, heavily grazed, or annually hayed. These practices generally degrade water quality and native aquatic resources including fish, reptiles, amphibians, birds, mollusks, and invertebrates. Since riparian sites are known to be diverse in wildlife species and generally support higher population densities than surrounding uplands, the following objective was developed.

D1.12 Objective: Improve water quality and native aquatic resources within riparian zones of the Red River of the North Watershed.

Strategies:

- ✓ Using existing USDA programs and other partner resources, develop opportunities under the Partners for Fish and Wildlife Program and NAWCA grants to establish vegetative riparian zones on 5 percent of land along rivers and tributaries in the Red River Watershed.
- ✓ Protect existing vegetation along rivers and tributaries in the Red River Watershed by working cooperatively with USDA, other agencies, organizations, and private landowners.

Nonnative Plant Management

See Refuge Nonnative Plant Management Section for more information (Objective R1.10).

Prescribed Burning and Wildfires

See Refuge Prescribed Burning and Wildfire Section for more information (Objective R1.11 and R1.12).

Wildlife

D2 Goal: Preserve, restore, and enhance the diversity and abundance of migratory birds and other native wildlife with emphasis on waterfowl, grassland, and wetland-dependent birds.

Waterfowl

In 1985 and 1986, nest searches on five WPAs in the District were conducted. Three of the WPAs were trapped for predators during 1985 and two were not trapped. The average nesting success for the two WPAs that were not trapped was 17 percent (Mayfield). The three WPAs that were trapped had a nesting success of 33 percent (Mayfield). A nesting success of approximately 15 to 20 percent is suggested for stable duck populations of the five most common species of dabbling ducks (Cowardin et al. 1985, Greenwood 1986, Klett et al. 1988). The WPAs in the District are predominately surrounded by cropland, like islands of habitat in a sea of black dirt. In these types of severely altered landscapes, intensive management (such as predator control) might be the only way to increase nest success (Clark and Nudds 1991, Nudds and Clark, 1992). Using tools like the Thunderstorm Map (Map 13), which shows the correlation between duck pairs/square mile and wetland density, seven Waterfowl Production Areas that had the highest potential to attract ducks were chosen as areas to concentrate our most intensive management efforts.

D2.1 Objective: Maintain an average duck nesting success of at least 30 percent Mayfield on seven WPA complexes in the District (Evanson/Anderson, Evanson, Nelson/Klefstad, Palensky/Wyum/Kaske, Smith/Tanner/Buckmiller, Englevale Slough, and Weaver/Ceil) for waterfowl production (Map 14).

Strategies:

- ✓ When the average nesting success falls below 30 percent (Mayfield) and wetland conditions are favorable, initiate predator control in the spring prior to the waterfowl nesting season, for approximately 2 to 3 weeks.
- ✓ Work cooperatively with Ducks Unlimited, Delta Waterfowl, local sportsmen, and private landowners to fund and implement a predator control program on these WPA complexes.
- ✓ If funded, annually monitor duck nesting success using standard nest dragging techniques for the seven WPA complexes.
- ✓ Maintain existing predator fences.

Migratory Birds

For more information, see discussion on priority management areas for grassland migratory birds and butterflies in Refuge Habitat Grassland Section.

D2.2 Objective: Monitor relative abundance and breeding status of four tallgrass prairie indicator bird species on the three WPAs as identified for grassland bird management and to provide feedback and information to the tallgrass prairie habitat management approach.

Strategy:

- ✓ Develop a step-down Monitoring Plan to address changes over time in relative abundance on a local scale and documentation of breeding of the four indicator species (northern harrier, upland sandpiper, bobolink, and grasshopper sparrow) on the three WPAs (Map 14).

Migratory Bird Disease Outbreaks

The first large disease outbreak in the Tewaukon District occurred in April 1990 near the town of Sheldon in Ransom County. Approximately 970 birds were collected from a large privately-owned wetland (160 acres in size) and from wetlands within a five mile radius. The majority of dead birds were snow geese. About six ducks and one Canada goose were also collected. The National Wildlife Health Center was never able to determine the cause of death although necrotic enteritis was suspected. Another large die-off of snow geese occurred in November 1990 on Kraft Slough in Sargent County. A total of 421 snow geese and one mallard were collected. In this incidence, the National Wildlife Health Center confirmed necrotic enteritis as the cause of the die-off.

In the fall of 1998, another disease outbreak occurred on the District. This outbreak occurred in some large wetlands in western Richland County and the Kraft Slough area in western Sargent County. Several sites were monitored, and birds were collected from each of the areas and sent to the National Wildlife Health Center. The total number of dead birds for all the sites was 3,873. A wide variety of birds were affected including American coots (1,450) and ducks, both divers and dabblers (1,530). The remaining number included shorebirds, grebes, gulls, egrets, cormorants, blackbirds, and rails. Botulism was determined by the National Wildlife Health Center to be the cause of death. Another botulism die-off occurred on the same wetlands in 1999. Coots and ducks were the predominate species found. Environmental conditions, dropping water levels, exposed mud flats, and hot temperatures provided favorable conditions for botulism.

Procedures for attempting to contain migratory bird disease outbreaks are similar for most of the diseases encountered on the District. These procedures include monitoring wetlands for dead or dying birds, immediate collection of dead birds, submitting specimens to the National Wildlife Health Center, and safe and proper disposal of the remaining carcasses. Promptly removing dead and dying birds from the disease outbreak area decreases the exposure that other birds and animals have to the carcasses and reduces the spread of the disease.

D2.3 Objective: Respond to and contain migratory bird disease outbreaks by applying safe and proper procedures as recommended by National Wildlife Health Center protocol.

Strategies:

- ✓ Submit carcasses to the National Wildlife Health Center for evaluation and determination of cause of death.
- ✓ Properly follow disease management procedures to limit impacts to migratory bird populations.

Native Resident Wildlife

Mammals

Little is known about the native mammals on Waterfowl Production Areas. White-tailed deer use many of the WPAs in the District. Some of the other mammals include beaver, muskrat, mink, woodchuck, Franklin's ground squirrel, thirteen-lined ground squirrel, cottontail rabbit, white-tailed jackrabbit, badger, raccoon, and striped skunk. Not much is known about the variety of weasels, bats, shrews, mice, voles, and pocket gophers on District lands. No baseline surveys have been conducted for small mammals. The following objective was developed to collect baseline data that will enable managers to better manage and assess threats to wildlife resources.

D2.4 Objective: Develop a Monitoring Plan to gather baseline data on small mammals on the following high priority WPAs: Hartleben WPA Complex; Gunness WPA; Biggs/Berndt WPA; Weaver/Coit; and Krause WPA (Sargent County) (Map 14).

Upland Game Birds

One of the resident (nonmigratory) native birds on the District is the sharp-tailed grouse. Prior to 1900, this species was common throughout the State (Coues 1878, Johnson 1964, Judd 1892). Currently, sharp-tailed grouse are found predominately in the mixed-grass prairie that is relatively undisturbed by excessive grazing or farming (Stewart 1975). Sharp-tailed grouse group in the spring on communal dancing grounds called leks. No leks are currently known to occur on Service lands in the Tewaukon District. Occasionally birds have been observed on the Ransom County Waterfowl Production Areas. No prairie chickens are known to occur on District lands. See Refuge Resident Native Wildlife Section for discussion on prairie chickens.

Reptiles and Amphibians

Reports of reptile and amphibian species in the District include work by Hoberg and Gause (1992). Four species of toads (great plains, American, Canadian, and Woodhouse's) and three species of frogs (northern leopard, wood frog, and western chorus) have been documented in the District (Hoberg and Gause 1992). Hoberg and Gause (1992) reported specimens of the tiger salamander, mudpuppy (Ransom County), northern prairie skink, western painted turtle, common snapping turtle, plains garter snake, and western hognose snake. Red-bellied snakes have been observed by the Tewaukon staff on the Hartleben WPA.

D2.5 Objective: Develop a Monitoring Plan to gather baseline data on amphibians and reptiles on the following high priority WPAs: Hartleben WPA Complex; Gunness WPA; Biggs/Berndt WPA; Weaver/Coit; and Krause WPA (Sargent County) (Map 14).

Fish

Several fish surveys have been conducted in the Sheyenne River and the Red River of the North. The earliest survey was in 1892 by A.J. Woolman in both of these rivers. Since that time, researchers, the North Dakota Game and Fish Department, the North Dakota Department of Health, North Dakota State University Department of Zoology, and the Fish and Wildlife Service have conducted fish surveys in one or both of these rivers. From 1892 to 1994, 84 species of fish (77 considered native) were reported from the Red River of the North basin (Koel 1997). The majority of fish (34 percent) were in the Cyprinidae family (includes shiners, dace, chubs and minnows), second were the Percidae family (darters, perch and walleye) (Koel 1997). Woolman (1896) reported longnose gar and blacknose shiner in the Red River of the North Watershed. These two species were not picked up in any subsequent surveys. Banded killifish have been collected before 1892 from the Sheyenne River but have not been collected since (Koel 1997). The greater redhorse, in the sucker family, has been found in the Red River of the North and the lower Sheyenne River but no recent observations have been made (U.S. Fish and Wildlife Service 1995).

During high water years, a few large wetlands on Waterfowl Production Areas provide some temporary fish habitat (Englevale Slough, Wollitz, and Hartleben WPAs). Most of these fish populations would be comprised primarily of fathead minnows. Other fish would most likely come from illegal introductions or movement of fish during high water years.

The primary purpose of WPAs is to benefit waterfowl. Recent research indicates that fish compete directly with ducklings for invertebrate food sources. Hill et al. (1987) reported that mallard ducklings feeding in lakes with high densities of fish had low densities of aquatic invertebrates, survived at lower rates than those feeding in areas with low densities of fish. Brood sizes also appeared to increase following removal of fish from wetlands where ducklings were foraging (Giles 1994).

The planning team did not develop specific management objectives for native stream fish or other native fish as no streams occur on District Service lands. No fish introductions are planned for larger wetlands on WPAs because they provide only temporary fish habitat and direct competition for food occurs between fish and ducklings.

Nonnative Wildlife

For further information on the Service's policy on nonnative wildlife, see the Refuge Wildlife Nonnative Section.

D2.6 Objective: Restrict the spread of existing and additional nonnative animal species (carp, house sparrows, feral dogs and cats) that adversely impact native species.

Strategies:

- ✓ Gather existing information and promote additional research on management techniques and affects of nonnative species on native flora and fauna.
- ✓ Apply, when appropriate, management tools (including lethal and nonlethal methods and habitat manipulation) that eliminate or reduce the expansion of nonnative animal species.

Other nonnative species, like the ring-necked pheasant, are not known to adversely impact District native species. For more discussion see Refuge Nonnative Wildlife Section

D2.7 Objective: Refrain from carrying out management activities that specifically encourage population expansion of existing introductions (pheasants, gray partridge) to the detriment of native species.

> *"Extinction of species, the silent crisis of our time, diminishes our world...and a commitment to the preservation of species diversity is fundamental to an optimistic view of the future of our own species."*
>
> - Harrison B. Tordoff, 1988, *Minnesota's Endangered Flora and Fauna*

Endangered Species

D3 Goal: Contribute to the preservation and restoration of endangered, threatened, rare, and unique flora and fauna that occur or have historically occurred in the District.

With the delisting of the peregrine falcon from the Federal Endangered Species List, only the federally threatened bald eagle and western prairie fringed orchid are known to occur or have been observed on the Tewaukon WMD. Bald eagles are regularly sighted during the spring and fall migration periods. Two endangered species, whooping cranes and gray wolves, historically occurred in the District. Occasionally, these species are reported in the District today.

Whooping Cranes

Whooping cranes historically nested in North Dakota. Records of whooping crane nests and young birds indicate that breeding birds once occurred locally on the southern Drift Plains, but were more common in the central and northeastern region (Stewart 1975). Whooping cranes more than likely migrated through the District. In June 1999, four whooping cranes were sighted in the Havana area by Refuge staff (visual observation documented by Siekaniec 1999). The planning team did not develop management objectives for whooping cranes since they are only rare migratory visitors to the District.

Gray Wolves

Historically, gray wolves were found throughout North Dakota and were known as plains wolves or buffalo wolves (U.S. Fish and Wildlife 1995). Gray wolves were extirpated from North Dakota through shooting, trapping, and poisoning but occasional sightings have been reported in 1985, 1990, and 1991. The planning team did not develop management objectives for gray wolves as they have not been regularly documented on the District.

Bald Eagles

In 1999 and 2000, two bald eagle nesting attempts were documented on private land in the District. The planning team did not develop management objectives for bald eagles since they are primarily migratory visitors and no nesting has occurred on Service lands in the District.

Western Prairie Fringed Orchid, Clodie Brauner

Western Prairie Fringed Orchid

The western prairie fringed orchid is a perennial plant of the North American tallgrass prairie and is found in native, calcareous prairies and sedge meadows. The western prairie fringed orchid was listed as a threatened species under the Endangered Species Act in 1989. Approximately 90 percent of known western prairie fringed orchids in the United States occur in the Red River Valley of North Dakota and Minnesota. Currently, the largest population exists on the Sheyenne National Grasslands in Ransom and Richland Counties. The remaining plants are found on adjacent private land. Some of these areas are protected by Service grassland easements. No known populations of western prairie fringed orchids exist on Waterfowl Production Areas. The primary cause of the orchid's decline was conversion of prairie to cropland. Hydrologic changes that drawdown or contaminate the water table may also adversely affect the species (Fish and Wildlife Service Recovery Plan 1996). The Federal status of this plant requires the Service to develop strategies for recovery. The following objectives were developed because prairie fringed orchids are a federally listed threatened species. Current funding is available in two NAWCA grants to protect orchid habitat and the largest populations of these plants are found in Tewaukon District counties.

D3.1 Objective: Work with the U.S. Fish and Wildlife Service Ecological Services Division, Forest Service, and private landowners with existing populations of western prairie fringed orchids to protect and enhance orchid habitat.

Strategies:

- ✓ Work with the ND Heritage Program to identify existing and historical populations of orchids on private land.
- ✓ Work cooperatively with private landowners to develop conservation plans (including fire, weed control, haying and mowing rotations, and grazing systems) to maintain self-sustaining orchid populations on private land.
- ✓ Work with the U.S. Fish and Wildlife Service Endangered Species Division to implement actions needed in the orchid recovery plan.
- ✓ Protect 300 acres of orchid habitat through grassland easements or fee title purchase from willing sellers.

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Migratory Nongame Birds of Management Concern

In 1995, the Fish and Wildlife Service identified migratory nongame birds that were of management concern across the United States (U.S. Fish and Wildlife Service 1995). These species are of concern because of documented or apparent population declines, small or restricted populations or dependence on restricted or vulnerable habitats. The bird species that occur or may occur on the Tewaukon District include: (*Nest on the District)

Black tern * Ferruginous hawk Northern harrier * Yellow rail Upland sandpiper *	Olive-sided flycatcher Sedge wren * Dickcissel Baird's sparrow Grasshopper sparrow *	Loggerhead shrike Red-headed woodpecker Chestnut-collared longspur

With the exception of the five bird species that nest on the District, the other birds are seen only occasionally on the District during migration. The northern harrier, upland sandpiper, and the grasshopper sparrow have been chosen as indicator species for the Tallgrass Prairie Management Approach. Population, breeding, and habitat information on these three indicator species are addressed in the Refuge Tallgrass Prairie Management Approach Section. Since little information exists about District breeding populations of the remaining birds of Management Concern, more habitat suitability and use information needs to be identified.

D3.2 Objective: Evaluate methods to determine habitat suitability and use by these species (black tern, ferruginous hawk, yellow rail, loggerhead shrike, red-headed woodpecker, olive-sided flycatcher, dickcissel, Baird's sparrow, chestnut-collared longspur).

Other Rare Species

Rare Prairie Butterflies

Of particular interest are three rare prairie butterflies: the Dakota skipper, powesheik skipper, and the regal fritillary because they are only found on native prairie sites that have diverse plant communities. Dakota skipper habitat consists of mesic tallgrass to mid-grass native prairie. Larval foods include little bluestem and needle-and-thread grasses. Nectar plants include yellow and purple coneflower, white prairie clover, black-eyed susans, and white camus (Royer 1997). Powesheik skippers require undisturbed wet to mesic prairie habitat composed of sedges for larval food and available nectar sources that include yellow coneflower and black-eyed susans (Royer and Marrone 1992). The principal habitat requirements for the regal fritillary are large extensive native tallgrass prairie tracts with native violets and nectar supplies including long-headed coneflower, black-eyed susans, fleabanes, and blazingstars (Royer and Marrone 1992).

Monarch Butterfly, Cindie Brunner

Two butterfly inventory surveys were conducted by Tim Orwig in 1995 and 1996 on a number of District prairie and wetland sites. In 1995, the Krause WPA and Hartleben WPA were surveyed, and in 1996, the Hartleben WPA, Aaser WPA, Krause WPA, Gunness WPA, and McGill WPA were surveyed. Powesheik skippers and regal fritillary butterflies were found on the Hartleben WPA, Krause WPA (Tewaukon staff sightings), and Aaser WPA. Powesheik skippers were observed on the Gunness WPA, a broad-winged skipper was spotted on the Aaser WPA, and one Dakota skipper was seen both in 1995 and 1996 on the Hartleben WPA. Presence of these rare butterflies on these isolated prairies requires specific management techniques designed to maintain their populations. Swengel (1996) suggested dividing prairie sites into smaller management units (one third of tract size) as a preferred management technique in order to limit the impacts of a particular management activity like fire or haying affecting on the entire tract. Swengel (1996) found haying to be the favored management strategy to maintain skipper habitat and recommended large uniform management treatments be avoided.

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The following objectives were developed to ensure the survival of native prairie butterfly populations.

D3.3 Objective: Maintain populations of rare prairie butterflies including powesheik skipper, Dakota skipper, and regal fritillary on native prairie sites on the Hartleben, Aaser, and Gunness WPAs.

Strategies:
- ✓ Develop a Monitoring Plan to gather data on species occurrence, relative abundance, and locations of rare butterflies.
- ✓ Schedule management activities (prescribed fire, haying) on prairie sites with populations of prairie butterflies on small tracts. Avoid treating entire sites with the same tool in the same or following year.

D3.4 Objective: Develop a Monitoring Plan to gather information on species composition and relative abundance on other known rare butterfly populations within the District on suitable sites every three years.

D3.5 Objective: Evaluate reintroduction of the three rare butterflies on suitable native prairie sites.

Elktoe Mussel

The elktoe mussel is found in water of a specific depth and flow that provides a certain mix of river bottom components found in the riffle sections of streams (U.S. Fish and Wildlife 1996). The elktoe mussel is also listed on the American Fishery Society Endangered Species list as a species of "special concern." Specimens have been collected recently in the Red River of the North (U.S. Fish and Wildlife Service 1996). The planning team did not develop specific management objectives for elktoe mussels as they are not known to occur on District Service lands.

North Dakota State Listed Rare Species

Animals

- Northern (Greater) Prairie Chicken - State Threatened
- Mountain Plover - State Extirpated
- Pugnose Shiner - State Endangered
- Greater Redhorse - State Threatened
- Prairie Skink - State Threatened

Prairie Chicken

There has been a lot of debate over greater prairie chickens which were not thought to occur in North Dakota prior to the late 1870s (Stewart 1975). By 1884 prairie chickens were as common as sharp-tailed grouse and spread rapidly throughout the State (Stewart 1975). Downward population trends started in the early 1940s until by 1972 fewer than 400 birds existed in North Dakota (Johnson et al. 1997). Several records indicated historical breeding on District lands (Tewaukon file records). In 1993, 30 prairie chickens were released on the Englevale Slough WPA Complex by the ND Game and Fish Department. In recent years, no prairie chickens have been found on the Englevale Slough WPA. The planning team did not develop specific management objectives for prairie chickens as they are not known to occur on District Service lands.

Mountain Plover

A record on July 29, 1921, (Lincoln 1925) reports a mountain plover in the vicinity of Carter's Slough near Hankinson in Richland County. This is the only known record for this bird in the District. The planning team did not develop management objectives for mountain plovers they are not known to occur on District Service lands.

Greater Redhorse

The greater redhorse is in the sucker family and prefers large streams with clear water and bottoms composed of clean sand or gravel. The greater redhorse has been found in the Red River of the North and lower Sheyenne Rivers; however, no recent observations have been made. The greatest threats to the redhorse are changes to its river habitat including, dams, channelization, pollution, destruction of riparian areas, and increased water speed and turbidity due to increased drainage into the river (U.S. Fish and Wildlife Service 1995). The planning team did not develop specific management objectives for greater redhorse as they are not known to occur on District Service lands.

Prairie Skink

Prairie skinks were observed on the Hartleben WPA in 1997 and 1998. Prairie skinks are active during the summer and are found in sandy areas and grassland in eastern North Dakota. Specific management objectives were not developed for prairie skinks since District prairie habitat objectives would provide necessary habitat.

Plants

See Appendix C

Handsome Sedge

Only three records exist for the handsome sedge in North Dakota, and they occur in Richland County in about one mile of river valley (U.S. Fish and Wildlife Service 1995). The planning team did not develop specific management objectives for handsome sedge as they are not known to occur on District Service lands.

White Lady's Slipper, Cindie Brunner

Small White Lady's Slipper
The small white lady's slipper is a perennial plant in the orchid family. It is found in wet to mesic, calcareous, tallgrass prairies, sedge meadows, and fens. This plant needs full sun exposure or only light shade (Bowles 1983, Case 1987). It is ranked on the North Dakota Natural Heritage State List as "imperiled in the State." One of the largest population of white lady's slippers in North Dakota exists on the Hartleben WPA and averages approximately 200 plants. This site has historically been in an annual late haying regime. Haying and prescribed fire (early spring or late fall) are currently being applied on the site to maintain populations of lady's slippers.

D3.6 Objective: Maintain and monitor an average population of 200 to 300 small white lady's slippers on the Hartleben WPA.

Strategy:
- ✓ Develop a Monitoring Plan to measure species relative abundance and evaluate habitat management techniques including haying and prescribed burning.

Rare Species Objectives
The following objectives were developed to direct the conservation of rare species utilizing protection and management techniques. Objectives also identify opportunities to conserve these species if any are found on Complex lands in the future. Consideration for other District management objectives that overlap with other agency and organization conservation goals and objectives would be taken into account.

D3.7 Objective: Determine habitat suitability for North Dakota State listed rare wildlife and plant species on WPAs within the District.

Strategy:
- ✓ Work cooperatively with ND Game and Fish Department, ND Heritage Program, and Nature Conservancy to initiate a baseline survey on suitable sites to determine presence or absence of these species on WPAs.

D3.8 Objective: Protect North Dakota State listed wildlife and plant species habitat to maintain North Dakotas native biodiversity.

Strategy:
- ✓ Work cooperatively with Federal, State, local government agencies, nongovernmental agencies, and private landowners to identify, document, and protect critical habitat for State listed wildlife and plants through easements, fee title purchase from willing sellers, and cooperative agreements.

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Public Use and Recreation

WPA tracts are open to hunting, fishing, and trapping according to Title 50 CFR. At this time, stocked fisheries are not developed on WPAs. The following objectives were designed to provide information to the public and some background about the wildlife and habitat resources found there.

D4 Goal: ***Provide the public with quality opportunities to learn about and enjoy tallgrass prairie wetland ecosystems, the fish and wildlife, and history of the District in a safe and compatible manner.***

Hunting, Trapping, and Fishing

D4.1 Objective: Provide information about public opportunities for hunting, trapping, and fishing according to State and Federal Regulations on Waterfowl Production Areas.

Strategy:

✓ Work cooperatively with the ND Game and Fish Department to conduct law enforcement patrols on the District to ensure compliance.

Interpretation/Environmental Education

Very little interpretation currently exists on Waterfowl Production Areas due to the long distances that are required to maintain sites and limited funding. All environmental education efforts for the Complex are conducted through the Refuge.

The General Federation of Women's Cultura Club of Hankinson has partnered with the Fish and Wildlife Service to develop an interpretive walking trail on the tallgrass prairie on the Hartleben WPA.

D4.2 Objective: Through signs, pamphlets, and programs provide interpretation of the region's natural, cultural, historical resources, recreutional opportunities, and District management and activities to promote public awareness and advocacy.

Strategies:

✓ Develop a District public use pamphlet and map.

✓ Maintain the prairie walking trail on the Hankinson WPA native prairie site to provide information and educational interpretation of tall grass prairie ecosystem.

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Cultural Resources

No thorough cultural resource surveys have been conducted on the District. A few WPAs have had cultural evaluations (Class I and II) conducted where rights-of-way or construction has been proposed. Several historic trails are near or cross Waterfowl Production Areas. These trails include the Fort Ransom - Fort Wadsworth Trail which narrowly misses the Kiefstad WPA and crosses the Lundstad WPA in Sargent County. The 1863 General Sibley Expedition may have crossed the J. Palensky WPA and the Metzen WPA where some native prairie remains. Colonel McPhail's return route in 1862 is believed to have crossed or come close to the Arneson, Bilkre, Chose, Skonseng, Strander, Peterson, Holt, Grinstead, Weaver, and Dick WPA's in Ransom County. His party also traveled close to the Bauer WPA in Sargent County. The Twin Lakes Stockade, an overnight camp on the Fort Abercrombie - Fort Wadsworth Trail, is located one-half mile south of the Bladow WPA in Richland County (Refuge Manager Troester memo to Regional Director, January 31, 1972). An expedition to determine the suitability for a railroad occurred in 1853 to 1855 crossing Richland and Ransom Counties was documented by Isaac Stephens. Two objectives were developed to improve baseline cultural resource data which will yield better information for refuge managers.

D4.3 Objective: Conduct cultural resource inventories on construction and development sites as necessary.

Strategy:

- ✓ Work cooperatively with the Service archaeologist and SHPO (State Historic Preservation Officer) prior to all proposed actions.

D4.4 Objective: Preserve and protect existing cultural resources and future discoveries of archaeological sites associated with District lands.

Strategies:

- ✓ Annually conduct cultural resource surveys (Class II) on 10 percent of WPAs not previously surveyed.
- ✓ Coordinate and develop an agreement with the Sisseton-Wahpeton Sioux tribe on any discovery of human remains.

Partners

D5 Goal: Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive tallgrass prairie ecosystem in which the District plays a role.

D5.1 Objective: Create opportunities for new and maintain existing partnerships among Federal, State and local agencies, organizations, schools, corporations, and communities to promote the understanding and conservation of ecosystem and District resources, activities, and management.

Strategies:

- ✓ Maintain coordination with the ND Game and Fish Department to conserve, protect, and manage lands for wildlife.
- ✓ Continue to work with the Red River Area Sportsmen Club and the Sargent County Pheasants Forever on the Adopt-A-WPA program and look for other opportunities to improve the program.
- ✓ Implement and support the goals and complete the work detailed in the Drift Prairie Wetland Enhancement Project I and II funded under the North American Wetlands Conservation Act and the Dakota Tallgrass Prairie Project when funded.
- ✓ Preserve, restore, and enhance wetland, riparian, and grassland habitat on private lands.
- ✓ Work with other organizations to improve duck nesting success in the district on private lands especially in areas of high waterfowl recruitment (Zones of Opportunity). Organizations include ND Game and Fish Department, Ducks Unlimited, Delta Waterfowl, and Natural Resource Conservation Service.
- ✓ Coordinate and work with the U.S. Forest Service and Nature Conservancy on prairie restoration, enhancement, and protection issues (including sharing seed sources, prescribed burning, nonnative plant control, etc.).

Tewaukon Easement Refuges

Purpose

The purpose for the Tewaukon Easement Refuges is determined by legislation that authorized acquisition although the easement interest in these lands was acquired primarily to benefit migratory birds.

- Easement Refuges were established by Executive Order 6910 on November 26, 1934 which provided for acquisition of easements for maintaining and operating artificial lakes, to maintain a closed refuge, and a wildlife demonstration unit.

E1 Goal: **Administer existing easement refuges.**

Habitat Management

Originally, five easement refuges existed in the Tewaukon District. These included: Tewaukon, Clouds Lake, Lake Elsie, Storm Lake, and Wild Rice Easement Refuges. When the Tewaukon National Wildlife Refuge was established, only three easement refuges remained, including Lake Elsie, Storm Lake, and Wild Rice. Two tracts of land on the south side of the Tewaukon Unit are easement refuges, and several flowage easements are located on the west side of the Tewaukon Unit along the Wild Rice River. The landowners in these locations probably elected not to complete a fee title transaction at the time these transactions were completed on other portions of the Refuge. Over time, the structures that impounded water on Wild Rice and Storm Lake Easement Refuges deteriorated and were not repaired. Waterfowl use decreased with an increase in housing development, gravel pit development, and recreational boating on Lake Elsie. The Wild Rice Easement Refuge is no longer providing waterfowl values due to a lack of permanent water with the loss of the water control structure. Storm Lake is still important, especially for diving ducks and western and pied-billed grebes. It is located adjacent to the town of Milnor, and a golf course was developed on the north side in 1974 which included impacts to 1.7 acres of fee title property. An agreement between the Service and the Milnor golf course and City of Milnor has been implemented to minimize these fee title impacts.

In 1998, the Service divested Lake Elsie Easement Refuge after 53 years of human activity altered the privately owned uplands to the point where they provide little value for wildlife. It is the station's desire to eventually divest the Wild Rice Easement Refuge as well. Storm Lake is still beneficial to wildlife and should remain a part of the Refuge System. The easement refuge deed does not regulate any uses of the upland areas and makes it difficult to manage for wildlife purposes.

E1.1 Objective: Protect all easement refuge property interests from hunting, draining, or conversion in Sargent County.

Strategies:
- ✓ Annually monitor the two remaining easement refuges for conflicts.
- ✓ Work cooperatively with landowners to resolve conflicts.

E1.2 Objective: Divest the Wild Rice Easement Refuge as it no longer serves its original purpose.

Water rights for Wild Rice, Lake Elsie, and Storm Lake Easement Refuges were established in 1934 pursuant to Section 8270 (repealed 1943) of the Compiled Laws of North Dakota for the year 1913. The State Engineer's Office has raised questions about the validity of the water rights for the Wild Rice and Storm Lake Easement Refuges. The Service affirmatively relinquished the water rights for Lake Elsie in February 1999 after Congress terminated Refuge status.

E1.3 Objective: Maintain existing water rights on Storm Lake Easement Refuge.

- ✓ Strategy: Replace/repair deteriorated structure at Storm Lake.

Kraft Slough

The initial stage of the Garrison Diversion Unit (GDU) project was authorized on August 5, 1965. As part of that authorization, Kraft Slough was to be developed as Thayer Reservoir. The Reservoir was designed to regulate irrigation flows in the lower James River Valley of the Missouri River basin and the Wild Rice River Valley of the Red River of the North. Thayer Reservoir and its associated wildlife area consisted of 8,386 acres. It included Kraft Slough, Pickell Slough, Lake Thayer, an unnamed wetland, and associated uplands in the area. This Plan was described in the Bureau of Reclamation's (Reclamation) Environmental Impact Statement, Initial Stage GDU, INT FES 74-3, January 10, 1974.

The GDU Reformulation Act of 1986 (Reformulation Act) was signed by the President on May 12, 1986. The Reformulation Act modified the 1965 GDU project authorization in several ways which would affect the disposition of Kraft Slough. Thayer Reservoir was de-authorized. The establishment of a refuge at Kraft Slough was authorized.

The Reformulation Act directs the Secretary of the Interior to "... acquire up to 5,000 acres in the Kraft and Pickell Slough areas and to manage the area as a component of the National Wildlife Refuge System giving consideration to the unique wildlife values of the area. In acquiring the lands which comprise the Kraft and Pickell Slough complex, the Secretary is authorized to acquire wetlands in the immediate vicinity which may be hydrologically related and nearby uplands as may be necessary to provide for proper management of the complex. The Secretary is also authorized to provide for appropriate visitor access and control at the refuge."

Reclamation has been acquiring lands to develop the Refuge and upon development, will transfer the administration of the Refuge to the U.S. Fish and Wildlife Service. The unit at this time consists of 1,696 acres purchased from willing sellers.

Due to concerns expressed by adjacent landowners and the public, the Service has conducted an evaluation of maintaining the hunting opportunities as they now exist when the area becomes a national wildlife refuge. The evaluation showed that the use would be compatible and could continue. Other than providing technical assistance, the Complex staff is not involved in the acquisition or management of the unit at this time. These responsibilities are currently the Bureau of Reclamation's until such time that acquisition is complete and comprises a management unit. Then the unit will be transferred to the Service.

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Implementation and Monitoring

Personnel

Current staffing at the Refuge consists of eight permanent and eight seasonal employees. One of the positions, Tallgrass Prairie Biologist, is shared with South Dakota. A recent national evaluation of complexity and minimum staffing requirements of the Complex indicated that an additional 10 permanent staff is suggested. Additional seasonal staff will be required to implement the strategies in the CCP and effectively monitor the flora and fauna, to determine if the goals and objectives in the Plan are being met.

At this time, the Refuge has an annual base budget of $374,000 to maintain salaries for eight full-time permanent personnel and annual operating expenses for the Refuge and Wetland Management District. The current budget represents the minimum needed to maintain current annual activities and does not adequately support Complex habitat management, biological monitoring, maintenance, public use, and educational programs and all Complex facilities and structures.

The following chart shows the current staff and the proposed additional staff required to fully implement the CCP. If all positions are funded, the Refuge Complex staff will be able to carry out all aspects of this Plan. This would provide maximum benefits to wildlife, maximum efficiency, improve facilities and provide for increased public use. Projects that have adequate funding and staffing will receive priority to accomplish. Staffing and funding are requested for the 15-year period of the Plan.

Current	Proposed
Management Staff Complex Project Leader, GS-13 Supervisory Refuge Operations Specialist, GS-11	Complex Project Leader, GS-13 Supervisory Refuge Operations Specialist, GS-12 Refuge Operations Specialist, GS-9/11
Biological Staff Complex Biologist, GS-9 Seasonal Biological Technicians, GS-4 to GS-6 (2) Tallgrass Biologist, GS-11*	Complex Biologist, GS-11 Biologist, GS-9 Biological Technician, GS-7 Seasonal Biological Technicians, GS-4 to GS-7 (3) Private Lands Biologist, G[illegible] Tallgrass Biologist, GS-12*
Public Use Staff	Law Enforcement Officer, GS-11* Outdoor Recreation Planner, GS-11 Seasonal Public Use Staff, GS-7/9 (2)
Fire Management Staff Career Seasonal Range Technician, GS-6* Seasonal Range Technicians, GS-3 to GS-6 (5)*	Fire Management Officer, GS-9* Career Seasonal Range Technician ,GS-7* Seasonal Range Technicians, GS-3 to GS-6 (6)*
Administrative Staff Administrative Assistant, GS-6/7	Administrative Assistant, GS-8 Administrative Assistant, GS-6/7
Maintenance Staff Equipment Operator, WG-10 Maintenance Worker, WG-8	Equipment Operator, WG-10 Maintenance Worker, WG-8 Career Seasonal Maintenance Workers, WG-8 Career Seasonal Tractor Operator, WG-7
*shared with other stations in North and South Dakota	

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Funding Needed to Implement This Plan

Projects required to implement the Tewaukon CCP are listed in Appendix J. This Appendix shows the funding needed to implement the CCP through two different systems. The first system is the Refuge Operation Needs System (RONS). This documents requests to Congress for funding and staffing needed to carry out projects above the existing base budget. Amounts shown include a start-up cost of implementing each program with actual yearly costs that are significantly less. The other system is the Maintenance Management System (MMS) which documents the equipment, buildings, and other existing property that require repair or replacement. Twelve of the current RONS projects directly support the implementation of the CCP.

Other funding needs include the maintenance or replacement of existing equipment and facilities. In the past, the Complex has had a large backlog of these funding needs. However, in recent years, much has been accomplished in funding these backlogs. Below is a list of remaining needs required to implement the CCP and maintain the structures and equipment to safe standards for the 15 years of the Plan.

Vehicles	$1,339,250
Equipment	$ 561,585
Public Use Facilities	$ 300,000
Buildings and Facilities	$ 50,000
Water Control Structures and Dikes	$ 900,000
Roads, Gates, and Fences	$ 7[illegible]
	$3,224,335

A list of the top eleven items is located in the Maintenance Management System list in Appendix J.

Step-Down Management Plans

Service managers have traditionally used the Refuge Manual to guide field station management actions. The policy direction given through the Manual has provided direction for developing a wide variety of plans which are used to prepare annual work schedules, budgets, public use, safety, and land management actions. The CCP is intended as a broad umbrella plan which provides general concepts and specific wildlife, habitat, endangered species, public use, and partnership objectives. The purpose of step-down management plans is to provide greater detail to managers and employees who will implement the strategies described in the CCP.

Under the CCP, the Complex staff will revise or develop several step-down plans for the Refuge and District. Complex step-down plans to be revised include:

Public Use Plan
Cropland Management Plan
Fisheries Management Plan
Water Management Plan
Upland Management Plan
Fire Management Plan

Staff will also develop Habitat and Wildlife Monitoring Plans.

Partners

Partnerships require extensive staff time to coordinate, develop, and maintain. Long-term commitments including funding and staff time are needed to maintain a strong and lasting relationship with partners. Without appropriate staffing, we run the risk of losing our current partners and not developing new partners. Several of the objectives in the CCP depend on partner support and funding. Many of our wildlife, habitat, and public use programs would not continue without the additional funding and support from partners. Without partners, many of the habitat protection, restoration, and enhancement projects would go unfunded. Over time, the diversity of wildlife species will begin to decline as the habitat degrades. Partners are essential in fully implementing the CCP for the Tewaukon Complex.

Monitoring and Evaluation

Adaptive management is a flexible approach to long-term management of natural resources that is directed over time by the results of ongoing monitoring activities and other information. Habitat, wildlife, and public use management techniques and specific objectives will be regularly evaluated as results of the monitoring program and other new technology and information become available. These periodic evaluations will be used over time to adapt both the management objectives and techniques to better achieve management goals.

Monitoring is an essential component of the CCP. Monitoring strategies have been integrated into many of the goals and objectives. Specific details including monitoring strategies, methods, techniques, and locations will be outlined in a step-down Complex Monitoring Plan. In this CCP, habitat monitoring receives the primary emphasis. Many of the wildlife species on the Complex are migratory birds. Migratory birds are impacted by a variety of factors (drought, disease, pollution, habitat destruction, etc.) on their wintering and nesting grounds and all along their migration pathways. Determining whether or not a habitat manipulation on a Refuge field or wetland is wholly responsible for a Refuge migratory bird population change is difficult. Managers can strive to gather current information about the critical habitat needs for targeted species and then design Habitat Management Plans and strategies to met these needs. The habitat can then be monitored to determine if the management strategies are providing the critical habitat needs of a wildlife species. For example, if one of the critical habitat needs for bobolinks is vegetative structure at a specific density, managers can manipulate vegetation to achieve this structure and density. Whether or not bobolink use increases on the manipulated field, when the vegetation structure and density meet the conditions that bobolinks prefer, may or may not be directly tied to the manipulation. Monitoring bobolink populations in the manipulated field over a long period of time can provide some general local population trend information and document bird use. Managers must then carefully evaluate the bird use data to try and determine if a direct correlation exists to the habitat manipulation.

All habitat management activities will be monitored to assess whether the desired effect on wildlife and habitat components has been achieved. Baseline surveys will be conducted for wildlife species for which existing or historical numbers and occurrence is not well known. It is also important to conduct studies to monitor wildlife responses to increased public use including fishing, hunting, wildlife observation, and environmental education.

Monitoring should be designed and developed with Universities and/or Government research divisions when stringent protocols or complex data analysis is needed. Applied research can help to answer habitat, wildlife, and public use management questions. Complex staff will work with researchers to ensure that the research is applicable and compatible with Complex objectives.

This CCP is designed to be effective for a 15-year period. Periodic review of the CCP will be required to ensure that established goals and objectives are being met and strategies are being implemented. Ongoing monitoring and evaluation will be an important part of this process.

Key monitoring needs are identified throughout the CCP. A step-down Complex Monitoring Plan will incorporate and describe how, when, and who will conduct the monitoring.

Plan Amendment and Revision

The CCP will guide management on the Complex for the next 15 years. CCPs are ultimately signed by the Regional Director, Mountain Prairie Region 6, thus providing regional direction to the station project leader. A copy of the CCP will be provided to all those who are interested. The project leader at the station will review the CCP every five years to determine if it needs revision. In the case of severe circumstances, the project leader has the authority to modify management actions to respond appropriately. The Plan will be revised no later than 2015.

Comprehensive Conservation Plan Preparers

The planning team was comprised of:

- Allison Banks, Division of Planning
- Sandra Siekaniec, Project Leader
- Jack Lalor, Refuge Operations Specialist
- Kristine Askerooth, Biologist
- Brian Kietzman, Wildlife Resource Management Biologist, ND Game and Fish Department
- Jaymae Fojtik, GIS Mapping
- Beverly Boecher, Education and Visitor Services (cover and photos)
- Barbara Shupe, Writer/Editor, editing and document layout

The Draft CCP, Environmental Assessment, and Final CCP were written by Sandra Siekaniec, Kristine Askerooth, and Jack Lalor. The documents were reviewed by Tewaukon Complex staff, Regional Office staff, Biological Resources Division, and other Service offices.

Appendix A. Tewaukon NWR Complex Wildlife Species Lists

Bird List

(Species known to nest on the Complex are marked with an *)

Loons		
Common Loon		*Gavia immer*
Grebes		
Pied-billed Grebe*		*Podilymbus podiceps*
Horned Grebe		*Podiceps auritus*
Red-necked Grebe*		*Podiceps grisegena*
Eared Grebe*		*Podiceps nigricollis*
Western Grebe*		*Aechmophorus occidentalis*
Pelicans		
American White Pelican		*Pelecanus erythrorhynchos*
Cormorants		
Double-crested Cormorant*		*Phalacrocorax auritus*
Bitterns, Herons, and Egrets		
American Bittern*		*Botaurus lentiginosus*
Least Bittern*		*Ixobrychus exilis*
Great Blue Heron*		*Ardea herodias*
Great Egret*		*Ardea Alba*
Snowy Egret		*Egretta thula*
Cattle Egret		*Bubulcus ibis*
Green Heron*		*Butorides virescens*
Black-crowned Night-Heron*		*Nycticorax nycticorax*
New World Vultures		
Turkey Vulture		*Cathartes aura*
Swans, Geese, and Ducks		
Greater White-fronted Goose		*Anser albifrons*
Snow Goose		*Chen caerulescens*
Canada Goose*		*Branta canadensis*
Tundra Swan		*Cygnus columbianus*
Wood Duck*		*Aix sponsa*
Gadwall*		*Anas strepera*
American Wigeon*		*Anas americana*
American Black Duck		*Anas rubripes*
Mallard*		*Anas platyrhynchos*
Blue-winged Teal*		*Anas discors*
Northern Shoveler*		*Anas clypeata*
Northern Pintail*		*Anas acuta*
Green-winged Teal*		*Anas crecca*
Canvasback*		*Aythya valisineria*
Redhead*		*Aythya americana*
Ring-necked Duck		*Aythya collaris*
Lesser Scaup*		*Aythya affinis*
Bufflehead		*Bucephala albeola*
Common Goldeneye		*Bucephala clangula*
Hooded Merganser		*Lophodytes cucullatus*
Common Merganser		*Mergus merganser*
Red-breasted Merganser		*Mergus serrator*
Ruddy Duck*		*Oxyura jamaicensis*
Osprey, Kites, Hawks, and Eagles		
Osprey		*Pandion haliaetus*
Bald Eagle		*Haliaeetus leucocephalus*
Northern Harrier*		*Circus cyaneus*
Sharp-shinned Hawk		*Accipiter striatus*
Cooper's Hawk		*Accipiter cooperii*
Northern Goshawk		*Accipiter gentilis*
Broad-winged Hawk		*Buteo platypterus*
Swainson's Hawk*		*Buteo swainsoni*
Red-tailed Hawk*		*Buteo jamaicensis*
Ferruginous Hawk		*Buteo regalis*
Rough-legged Hawk		*Buteo lagopus*
Golden Eagle		*Aquila chrysaetos*
Falcons and Caracaras		
American Kestrel*		*Falco sparverius*
Merlin		*Falco columbarius*
Peregrine Falcon		*Falco peregrinus*
Prairie Falcon		*Falco mexicanus*
Gallinaceous Birds		
Gray Partridge*	Introduced	*Perdix perdix*
Ring-necked Pheasant*	Introduced	*Phasianus colchicus*
Sharp-tailed Grouse		*Tympanuchus phasianellus*
Greater Prairie-Chicken		*Tympanuchus cupido*
Rails		
Virginia Rail*		*Rallus limicola*
Sora*		*Porzana carolina*
American Coot*		*Fulica americana*
Cranes		
Sandhill Crane		*Grus canadensis*
Plovers		
Black-bellied Plover		*Pluvialis squatarola*
American Golden-Plover		*Pluvialis dominica*
Semipalmated Plover		*Charadrius semipalmatus*
Killdeer*		*Charadrius vociferus*
Stilts and Avocets		
American Avocet*		*Recurvirostra americana*
Sandpipers and Phalaropes		
Greater Yellowlegs		*Ttinga melanoleuca*
Lesser Yellowlegs		*Tringa flavipes*
Solitary Sandpiper		*Tringa solitaria*
Willet*		*Catoptrophorus semipalmatus*
Spotted Sandpiper*		*Actitis macularia*
Upland Sandpiper*		*Bartramia longicauda*
Hudsonian Godwit		*Limosa haemastica*
Marbled Godwit		*Limosa fedoa*
Ruddy Turnstone		*Arenaria interpres*
Red Knot		*Calidris canutus*
Sanderling		*Calidris alba*
Semipalmated Sandpiper		*Calidris pusilla*
Least Sandpiper		*Calidris minutilla*
White-rumped Sandpiper		*Calidris fuscicollis*
Baird's Sandpiper		*Calidris bairdii*
Pectoral Sandpiper		*Calidris melanotos*
Dunlin		*Calidris alpina*
Stilt Sandpiper		*Calidris himantopus*
Long-billed Dowitcher		*Limnodromus scolopaceus*
Common Snipe*		*Gallinago gallinago*
Wilson's Phalarope*		*Phalaropus tricolor*
Red-necked Phalarope		*Phalaropus lobatus*
Skuas, Jaegers, Gulls, and Terns		
Franklin's Gull		*Larus pipixcan*
Bonaparte's Gull		*Larus philadelphia*
Ring-billed Gull		*Larus delawarensis*
California Gull		*Larus californicus*
Herring Gull		*Larus argentatus*
Caspian Tern		*Sterna caspia*
Common Tern		*Sterna hirundo*
Forster's Tern*		*Sterna forsteri*
Black Tern*		*Chlidonias niger*

Pigeons and Doves		
Rock Dove	Introduced	*Columba livia*
Mourning Dove*		*Zenaida macroura*
Cuckoos and Anis		
Black-billed Cuckoo*		*Coccyzus erythropthalmus*
Yellow-billed Cuckoo		*Coccyzus americanus*
Typical Owls		
Eastern Screech-Owl		*O[illegible] asio*
Great Horned Owl*		*Bubo virginianus*
Snowy Owl		*Nyctea scandiaca*
Long-eared Owl		*Asio otus*
Short-eared Owl*		*Asio flammeus*
Nightjars		
Common Nighthawk		*Chordeiles minor*
Whip-poor-will		*Caprimulgus vociferus*
Swifts		
Chimney Swift		*Chaetura pelagica*
Hummingbirds		
Ruby-throated Hummingbird*		*Archilochus colubris*
Kingfisher		
Belted Kingfisher*		*Ceryle alcyon*
Woodpeckers		
Red-headed Woodpecker		*Melanerpes erythrocephalus*
Downy Woodpecker*		*Picoides pubescens*
Hairy Woodpecker*		*Picoides villosus*
Northern Flicker*		*Colaptes auratus*
Tyrant Flycatchers		
Olive-sided Flycatcher		*Contopus cooperi*
Eastern Wood-Pewee*		*Contopus virens*
Willow Flycatcher*		*Empidonax traillii*
Least Flycatcher*		*Empidonax minimus*
Eastern Phoebe		*Sayornis phoebe*
Great Crested Flycatcher		*Myiarchus crinitus*
Western Kingbird*		*Tyrannus verticalis*
Eastern Kingbird*		*Tyrannus tyrannus*
Shrikes		
Loggerhead Shrike		*Lanius ludovicianus*
Northern Shrike		*Lanius excubitor*
Vireos		
Yellow-throated Vireo		*Vireo flavifrons*
Warbling Vireo		*Vireo gilvus*
Philadelphia Vireo		*Vireo philadelphicus*
Red-eyed Vireo*		*Vireo olivaceus*
Crows, Jays, and Magpies		
Blue Jay*		*Cyanocitta cristata*
Black-billed Magpie		*Pica hudsonia*
American Crow*		*Corvus brachyrhynchos*
Larks		
Horned Lark*		*Eremophila alpestris*
Swallows		
Purple Martin*		*Progne subis*
Tree Swallow*		*Tachycineta bicolor*
Northern Rough-winged Swallow*		*Stelgidopteryx serripennis*
Bank Swallow*		*Riparia riparia*
Cliff Swallow*		*Petrochelidon pyrrhonota*
Barn Swallow*		*Hirundo rustica*
Titmice and Chickadees		
Black-capped Chickadee*		*Poecile atricapilla*

Nuthatches		
Red-breasted Nuthatch		*Sitta canadensis*
White-breasted Nuthatch*		*Sitta carolinensis*
Creepers		
Brown Creeper*		*Certhia americana*
Wrens		
House Wren*		*Troglodytes aedon*
Winter Wren		*Troglodytes troglodytes*
Sedge Wren*		*Cistothorus platensis*
Marsh Wren*		*Cistothorus palustris*
Kinglets		
Golden-crowned Kinglet		*Regulus satrapa*
Ruby-crowned Kinglet		*Regulus calendula*
Thrushes		
Eastern Bluebird		*Sialia sialis*
Veery		*Catharus fuscescens*
Gray-cheeked Thrush		*Catharus minimus*
Swainson's Thrush		*Catharus ustulatus*
Hermit Thrush		*Catharus guttatus*
American Robin*		*Turdus migratorius*
Mimic Thrushes		
Gray Catbird*		*Dumetella carolinensis*
Brown Thrasher*		*Toxostoma rufum*
Starlings		
European Starling*	Introduced	*Sturnus vulgaris*
Wagtails and Pipits		
American (Water) Pipit		*Anthus rubescens*
Sprague's Pipit		*Anthus spragueii*
Waxwings		
Bohemian Waxwing		*Bombycilla garrulus*
Cedar Waxwing*		*Bombycilla cedrorum*
Wood Warblers		
Tennessee Warbler		*Vermivora peregrina*
Orange-crowned Warbler		*Vermivora celata*
Nashville Warbler		*Vermivora ruficapilla*
Yellow Warbler*		*Dendroica petechia*
Chestnut-sided Warbler		*Dendroica pensylvanica*
Magnolia Warbler		*Dendroica magnolia*
Yellow-rumped Warbler		*Dendroica coronata*
Black-throated Green Warbler		*Dendroica virens*
Palm Warbler		*Dendroica palmarum*
Bay-breasted Warbler		*Dendroica castanea*
Blackpoll Warbler		*Dendroica striata*
Black-and-white Warbler		*Mniotilta varia*
American Redstart*		*Setophaga ruticilla*
Ovenbird		*Seiurus aurocapillus*
Northern Waterthrush		*Seiurus noveboracensis*
Connecticut Warbler		*Oporornis agilis*
Mourning Warbler		*Oporornis philadelphia*
Common Yellowthroat*		*Geothlypis trichas*
Wilson's Warbler		*Wilsonia pusilla*
Canada Warbler		*Wilsonia canadensis*
Yellow-breasted Chat		*Icteria virens*
Tanagers		
Scarlet Tanager		*Piranga olivacea*

Sparrows and Buntings

Eastern Towhee	*Pipilo erythrophthalmus*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow	*Spizella passerina*
Clay-colored Sparrow*	*Spizella pallida*
Field Sparrow*	*Spizella pusilla*
Vesper Sparrow*	*Pooecetes gramineus*
Lark Sparrow*	*Chondestes grammacus*
Lark Bunting*	*Calamospiza melanocorys*
Savannah Sparrow*	*Passerculus sandwichensis*
Grasshopper Sparrow*	*Ammodramus savannarum*
Baird's Sparrow*	*Ammodramus bairdii*
Le Conte's Sparrow	*Ammodramus leconteii*
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*
Fox Sparrow	*Passerella iliaca*
Song Sparrow*	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
Harris' Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Lapland Longspur*	*Calcarius lapponicus*
Smith's Longspur	*Calcarius pictus*
Chestnut-collared Longspur*	*Calcarius ornatus*

Cardinals, Grosbeaks, and Allies

Snow Bunting	*Plectrophenax nivalis*
Rose-breasted Grosbeak*	*Pheucticus ludovicianus*
Indigo Bunting	*Passerina cyanea*
Dickcissel	*Spiza americana*

Blackbirds and Orioles

Bobolink*	*Dolichonyx oryzivorus*
Red-winged Blackbird*	*Agelaius phoeniceus*
Western Meadowlark*	*Sturnella neglecta*
Yellow-headed Blackbird*	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*
Brewer's Blackbird*	*Euphagus cyanocephalus*
Common Grackle*	*Quiscalus quiscula*
Brown-headed Cowbird*	*Molothrus ater*
Orchard Oriole*	*Icterus spurius*
Baltimore Oriole*	*Icterus galbula*

Finches

Purple Finch	*Carpodacus purpureus*
House Finch	*Carpodacus mexicanus*
Red Crossbill	*Loxia curvirostra*
Common Redpoll	*Carduelis flammea*
Pine Siskin	*Carduelis pinus*
American Goldfinch*	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*

Old World Sparrows

House Sparrow*	Introduced	*Passer domesticus*

Mammals with ranges within the area of Tewaukon National Wildlife Refuge Complex

*Documented sightings

Arctic Shrew	*Sorex arcticus*
Masked Shrew	*Sorex cinereus*
Northern Water Shrew	*Sorex palustris*
Pygmy Shrew	*Microsorex hoyi*
Northern Short-tailed Shrew*	*Blarina brevicauda*
Least Shrew	*Cryptotis parva*
Keen's Myotis	*Myotis keeni*
Little Brown Myotis*	*Myotis lucifugus*
Eastern Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*
Silver-haired Bat	*Lasionycteris noctivagans*
Big Brown Bat	*Eptesicus fuscus*
Eastern Cottontail*	*Sylvilagus floridanus*
White-tailed Jackrabbit*	*Lepus townsendii*
Woodchuck*	*Marmota monax*
Franklin's Ground Squirrel*	*Citellus franklini*
Richardson's Ground Squirrel*	*Citellus richardsoni*
Thirteen-lined Ground Squirrel*	*Spermophilus tridecemlineatus*
Eastern Fox Squirrel*	*Sciurus niger*
Red Squirrel	*Tamiasciurus hudsonicus*
Plains Pocket Gopher*	*Geomys bursarius*
Plains Pocket Mouse	*Perognathus flavescens*
Beaver*	*Castor canadensis*
Western Harvest Mouse	*Reithrodontomys megalotis*
White-footed Mouse	*Peromyscus leucopus*
Deer Mouse*	*Peromyscus maniculatus*
Northern Grasshopper Mouse*	*Onychomys leucogaster*
Southern Red-backed Vole*	*Clethrionomys gapperi*
Prairie Vole	*Microtus ochrogaster*
Meadow Vole	*Microtus pennsylvanicus*
Common Muskrat*	*Ondatra zibethicus*
Meadow Jumping Mouse	*Zapus hudsonius*
Western Jumping Mouse*	*Zapus princeps*
Coyote*	*Canis latrans*
Red Fox*	*Vulpes vulpes*
Common Raccoon*	*Procyon lotor*
Long-tailed Weasel*	*Mustela frenata*
Least Weasel	*Mustela nivalis*
American Mink*	*Mustela vison*
American Badger*	*Taxidea taxus*
Striped Skunk*	*Mephitis mephitis*
White-tailed Deer*	*Odocoileus virginianus*
Moose*	*Alces alces*

Historical

American Bison	*Bison bison*
Bobcat	*Lynx rufus*
Elk or Wapiti	*Cervus canadensis*
Gray Wolf	*Canis lupus*
Grizzly Bear	*Ursus horribilis*
Mule Deer	*Odocoileus hemionus*
Pronghorn Antelope	*Antilocapra americana*
River Otter	*Lutra canadensis*

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Amphibians and reptiles with ranges within the area of Tewaukon National Wildlife Refuge Complex

*Documented sightings

Mudpuppy*	*Necturus maculosus*
Tiger Salamander*	*Ambystoma tigrinum*
Eastern Tiger Salamander*	*Ambystoma tigrinum tigrinum*
Blotched Tiger Salamander*	*Ambystoma tigrinum melanostictum*
Gray Tiger Salamander	*Ambystoma tigrinum diaboli*
American Toad*	*Bufo americanus*
Great Plains Toad*	*Bufo cognatus*
Canadian Toad*	*Bufo hemiophrys*
Woodhouse's Toad	*Bufo woodhousii*
Gray Treefrog	*Hyla versicolor*
Western Chorus Frog*	*Pseudacris triseriata*
Common Snapping Turtle*	*Chelydra serpentina*
Painted Turtle*	*Chrysemys picta*
Prairie Skink*	*Eumeces septentrionalis*
Smooth Green Snake	*Opheodrys vernalis*
Red-bellied Snake*	*Storeria occipitomaculata*
Plains Garter Snake*	*Thamnophis radix*
Common Garter Snake*	*Thamnophis sirtalis*

Native Fish in the Red River Basin

(Peterka and Koel 1996)

Chestnut lamprey	*Ichthyomyzon castaneus*
Silver lamprey	*Ichthyomyzon unicuspis*
Lake sturgeon	*Acipenser fulvescens*
Longnose gar	*Lepisosteus osseus*
Bowfin	*Amia calva*
Goldeye	*Hiodon alosoides*
Mooneye	*Hiodon tergisus*
Cisco	*Coregonus artedii*
Whitefish	*Coregonus clupeaformis*
Quillback carpsucker	*Carpiodes cyprinus*
White sucker	*Catostomus commersoni*
Northern hogsucker	*Hypentelium nigricans*
Bigmouth buffalo	*Ictiobus cyprinellus*
Silver redhorse	*Moxostoma anisurum*
Golden redhorse	*Moxostoma erythrurum*
Shorthead redhorse	*Moxostoma macrolepidotum*
Greater redhorse	*Moxostoma valenciennesi*
Central stoneroller	*Campostoma anomalum*
Largescale stoneroller	*Campostoma oligolepis*
Spotfin shiner	*Cyprinella spiloptera*
Brassy minnow	*Hybognathus hankinsoni*
Common shiner	*Luxilus cornutus*
Silver Chub	*Macrhybopsis storeriana*
Pearl dace	*Margariscus margarita*
Hornyhead chub	*Nocomis biguttatus*
Golden shiner	*Notemigonus crysoleucas*
Pugnose shiner	*Notropis anogenus*
Emerald shiner	*Notropis atherinoides*
River shiner	*Notropis blennius*
Bigmouth shiner	*Notropis dorsalis*
Blackchin shiner	*Notropis heterodon*
Blacknose shiner	*Notropis heterolepis*
Spottail shiner	*Notropis hudsonius*
Rosyface shiner	*Notropis rubellus*
Sand shiner	*Notropis stramineus*
Weed shiner	*Notropis texanus*
Mimic shiner	*Notropis volucellus*
Northern redbelly dace	*Phoxinus eos*
Finescale dace	*Phoxinus neogaeus*
Bluntnose minnow	*Pimephales notatus*
Fathead minnow	*Platygobio gracilis*
Blacknose dace	*Rhinichthys atratulus*
Longnose dace	*Rhinichthys cataractae*
Creek chub	*Semotilus atromaculatus*
Black bullhead	*Ameiurus melas*
Yellow bullhead	*Ameiurus natalis*
Brown bullhead	*Ameiurus nebulosus*
Channel catfish	*Ictalurus punctatus*
Stonecat	*Noturus flavus*
Tadpole madtom	*Noturus gyrinus*
Central mudminnow	*Umbra limi*
Northern pike	*Esox lucius*
Banded killifish	*Fundulus diaphanus*
Burbot	*Lota lota*
Trout-perch	*Percopsis omiscomaycus*
Rock bass	*Ambloplites rupestris*
Green sunfish	*Lepomis cyanellus*
Pumpkinseed	*Lepomis gibbosus*
Orangespotted sunfish	*Lepomis humilis*
Bluegill	*Lepomis macrochirus*
Smallmouth bass	*Micropterus dolomieui*
Largemouth bass	*Micropterus salmoides*
White crappie	*Pomoxis annularis*
Black crappie	*Pomoxis nigromaculatus*
Rainbow darter	*Etheostoma caeruleum*
Iowa darter	*Etheostoma exile*
Least darter	*Etheostoma microperca*
Johnny darter	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Logperch	*Percina caprodes*
Blackside darter	*Percina maculata*
River darter	*Percina shumardi*
Sauger	*Stizostedion canadense*
Walleye	*Stizostedion vitreum*
Freshwater drum	*Aplodinotus grunniens*
Mottled sculpin	*Cottus bairdi*
Brook stickleback	*Culaea inconstans*

Introduced (nonnative) Fish

Rainbow trout	*Oncorhynchus mykiss*
Brown trout	*Salmo trutta*
Brook trout	*Salvelinus fontinalis*
Common carp	*Cyprinus carpio*
Flathead chub	*Platygobio gracilis*
Muskellunge	*Esox masquinongy*
Tiger muskie	*Esox lucius X E. masquinongy*
White bass	*Morone chrysops*

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Appendix B. Plant Species Mentioned in CCP

References for plant species names: McGregor et al, 1986

Alumroot	*Heuchera richardsonii*
American elm	*Ulmus americana*
Baltic rush	*Juncus balticus*
Bearded wheatgrass	*Agropyron subsecundum*
Big bluestem	*Andropogon gerardii*
Black-eyed susan	*Rudbeckia hirta*
Blue grama	*Bouteloua gracilis*
Box elder	*Acer negundo*
Buckbrush	*Symphoricarpos occidentalis*
Broad-leaved cattail	*Typha latifolia*
Bur oak	*Quercus macrocarpa*
Canada goldenrod	*Solidago canadensis*
Chokecherry	*Prunus virginiana*
Fowl mannagrass	*Glyceria striata*
Green needlegrass	*Stipa viridula*
Grey headed coneflower	*Ratibidia pinnata*
Handsome sedge	*Carex formosa*
Hardstem bulrush	*Scirpus acutus*
Hoary puccoon	*Lithospermum canescens*
Hoary willow	*Salix candida*
Indian grass	*Sorghastrum nutans*
Intermediate wheatgrass	*Agropyron intermedium*
June grass	*Koeleria pyramidata*
Leadplant	*Amorpha canescens*
Little bluestem	*Andropogon scoparius*
Intermediate wheatgrass	*Agropyron intermedium*
Maximilian sunflower	*Helianthus maximilianii*
Meadow anemone	*Anemone canadensis*
Narrow-leaved blazing star	*Liatris punctata*
Needle-and-thread	*Stipa comata*
Nodding lady tresses	*Spiranthes cernua*
Northern reedgrass	*Calamagrostis stricta*
Pasture sage	*Artemisia ludoviciana*
Porcupine grass	*Stipa spartea*
Prairie cordgrass	*Spartina pecinata*
Prairie dogbane	*Apocynum cannabinum*
Prairie sandreed	*Calamovilfa longifolia*
Prairie smoke	*Geum triflorum*
Prairie wild rose	*Rosa arkansana*
Purple coneflower	*Echinacea angustifolia*
Purple prairie clover	*Dalea purpurea*
Red elm	*Ulmus rubra*
Sand bluestem	*Andropogon hallii*
Showy milkweed	*Asclepias speciosa*
Sideoats grama	*Bouteloua curtipendula*
Small white lady's slipper	*Cypripedium candidum*
Sneezeweed	*Helenium autumnale*
Softstem bulrush	*Scirpus tabernaemontani*
Stiff goldenrod	*Solidago rigida*
Stiff sunflower	*Helianthus rigidus*
Switchgrass	*Panicum virgatum*
Tall blazing star	*Liatris pycnostachya*
Thimbleweed	*Anemone cylindrica*
Western prairie fringed orchid	*Platanthera praeclara*
Western wheatgrass	*Agropyron smithii*
White ash	*Fraxinus americana*
White aster	*Aster ericoides*
White camass	*Zigadenus elegans*
White prairie clover	*Dalea candida*
Wild lily	*Lilium philadelphicum*
Yellow coneflower	*Ratibidia columnifera*

Introduced

Alfalfa	*Medicago sativa*
Canada thistle	*Cirsium arvense*
Musk thistle	*Carduus nutans*
Bull thistle	*Cirsium vulgare*
Kentucky bluegrass	*Poa pratensis*
Leafy spurge	*Euphorbia esula*
Purple loosestrife	*Lythrum salicaria*
Reed canary grass	*Phalaris arundinacea*
Russian olive	*Eleagnus angustifolia*
Smooth brome	*Bromus inermis*
White sweet clover	*Melilotus alba*
Yellow sweet clover	*Melilotus officinalis*

Appendix C. ND State Rare and Unique Plant Species

These plant species are pulled from the ND Natural Heritage Program data files and only include species that are found in the Tewaukon WMD and are of greatest concern (S1 or S2).

North Dakota Natural Heritage State Rankings
S1 - Critically imperiled in state
S2 - Imperiled in state

Common Name	Scientific Name	ND Heritage Ranking
Adder's-tongue fern	*Ophioglossum pusillum*	S2
Bicknells sunrose	*Helianthemum bicknellii*	S1
Blue Cohosh	*Caulophyllum thalictroides*	S1
Bog Violet	*Viola conspersa*	S2
Brook flatsedge	*Cyperus bipartitus*	S1S2
Delicate sedge	*Carex leptalea*	S2
Dotted smartweed	*Polygonum punctatum*	S2
Downy hawthorn	*Crataegus mollis*	S1
Dutchman's breeches	*Dicentra cucullaria*	S1
Dwarf spikerush	*Eleocharis parvula*	S1S2
Early Panic-grass	*Panicum praecocius*	S2
Foxtail sedge	*Carex alopecoidea*	S2
Green kneeled cottongrass	*Eriophorum viridicarinatum*	S1
Handsome sedge	*Carex formosa*	S1
Hooked crowfoot	*Ranunculus recurvatus*	S1
Large yellow lady's slipper	*Cypripedium planiipetalum*	S2
Large-leaved pondweed	*Potamogeton amplifolius*	S2
Loesel's Twayblade	*Liparis loeselii*	S2
Low flatsedge	*Cyperdus diandrus*	S2
Marsh bellflower	*Campanual aparinoides*	S2
Marsh horsetail	*Equisetum palustre*	S2
Meadow horsetail	*Equisetum pratense*	S2
Meadow onion	*Allium canadense*	S1
Moonwort	*Botrychium minganense*	S1
Nodding ladies tresses	*Spiranthes cernua*	S1
Oakfern	*Gymnocarpium dryopteris*	S1
Prairie mimosa	*Desmanthus illinoensis*	S1
Purple sandgrass	*Triplasis purpurea*	S1
Richardson's sedge	*Carex richardsonii*	S1
Sensitive fern	*Onoclea sensibilis*	S2
Showy lady's slipper	*Cypripedium reginae*	S2
Sicklepod	*Arabis canadensis*	S1
Slendar cottongrass	*Eriophorum gracile*	S1
Small yellow lady's slipper	*Cypripedium parviflorum*	S2
Spiral sedge	*Carex convoluta*	S1
Spring cress	*Cardamine bulbosa*	S1
Southern watermeal	*Wolffia columbiana*	S2
Spiny naiad	*Najas marina*	S1
Stout wood reed	*Cinna arundinacea*	S1
Sweetflag	*Acorus calamus*	S2
Upright pinweed	*Lechea stricta*	S1
Wahoo	*Euonymus atropurpureus*	S2
W. Prairie fringed orchid	*Patanthera praeclara*	S2
White lady's slipper	*Cypripedium candidum*	S2
Wooly beach-heather	*Hudsonia tomentosa*	S1
Zigzag Goldenrod	*Solidago flexicaulis*	S1S2

Appendix D. Tewaukon Complex Water Rights

Tewaukon National Wildlife Refuge Water Rights

Declaration of Filing dated September 1, 1934, for Lake Tewaukon (Pool 1) and East and West White Lakes (Pools 12 and 11) (including Cutlers Marsh - Pool 2) for 7,198 acre-feet storage and 4,251 acre-feet seasonal use from the Wild Rice River.

Declaration of Filing dated September 1, 1934, for 397 acre-feet storage and 312 acre-feet seasonal use, for Cloud's Lake, now called Hepi Lake (Pool 8), from an unnamed tributary. Water use in Pools 5 through 10 are covered under this Right, with Hepi Lake to be drawn down to fill these pools.

Permit No. 1261, for 7,139 acre-feet from the Wild Rice River (4,852 acre-feet storage and 2,287 acre-feet seasonal use) for additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh, and West White Lake; 409 acre-feet seasonal use to replace water diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. The priority date is December 28, 1964.

Permit No. 1262, for 1,130 acre-feet (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake (Pool 14) from an unnamed tributary with a priority date of December 28, 1964.

Permit No. 1263, for 236 acre-feet for Mann Lake (Pool 13) and 450 acre-feet for Horseshoe Slough (Pool 16) for a total of 686 acre-feet from the Wild Rice River with a priority date of December 28, 1964.

Permit No. 3816, for 571 acre-feet (474 acre-feet storage and 97 acre-feet annual use) from the Wild Rice River for the Nickeson Bottoms, a tract owned jointly by ND Game and Fish Department, Bureau of Reclamation, and the Service. The priority date is August 15, 1985.

Wild Rice Easement Refuge Water Rights

Declaration of Filing dated September 1, 1934, for 80 acre-feet storage and 120 acre-feet seasonal use from the Wild Rice River.

Storm Lake Easement Refuge Water Rights

Declaration of Filing dated September 1, 1934, for 729 acre-feet storage and 516 acre-feet seasonal use from an unnamed tributary within the Wild Rice/Red River basin.

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Appendix E.
Key Legislation/Policies

(in alphabetical order)

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974): Directs the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Bald and Golden Eagle Protection Act (1940): The Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. The enacting clause of the original Act stated that the Continental Congress in 1782 adopted the bald eagle as the national symbol; that the bald eagle became the symbolic representation of a new nation and the American ideals of freedom; and that the bald eagle threatened with extinction.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Emergency Wetlands Resources Act (1986): The purpose of the Act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Executive Order 11987, Exotic Organisms (1977): This Executive Order requires Federal agencies, to the extent permitted by law, to: restrict the introduction of exotic species into the natural ecosystems on lands and waters owned or leased by the United States; encourage States, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the U.S.; restrict the importation and introduction of exotic species into any natural U.S. ecosystems as a result of activities they undertake, fund, or authorize; and restrict the use of Federal funds, programs, or authorities to export native species for introduction into ecosystems outside the U.S. where they do not occur naturally.

Executive Order 11988, Floodplain Management (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): This order directs all Federal agencies to avoid, if possible, adverse impacts to wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in wetland construction projects unless the head of the agency determines that there is no practicable alternative to such construction and that the proposed action includes measures to minimize harm. Also, agencies shall provide opportunity for early public review of proposals for construction in wetlands, including those projects not requiring an EIS.

Executive Order 12898, Environmental Justice (1994): This order provides minority and low-income populations an opportunity to comment on the development and design of Reclamation activities. Federal agencies shall make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13007 Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Executive Order 13084, Consultation and Coordination With Indian Tribal Governments (1998): The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. In treaties, our Nation has guaranteed the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers over their members and territory. The United States continues to work with Indian tribes on a government-to-government basis to address issues concerning Indian tribal self-government, trust resources, and Indian tribal treaty and other rights.

Federal Aid in Fish Restoration Act of August 9, 1950 (16 U.S.C. 777-777k), as amended: This Act, commonly referred to as the "Dingell-Johnson Act", provides aid to the States for management and restoration of fish having material value in connection with sport or recreation in marine or fresh waters. Funds from an excise tax on certain items of sport fishing tackle are appropriated to the Secretary of Interior annually and apportioned to States on a formula basis for approved land acquisition, research, development and management projects.

Federal Aid in Wildlife Restoration Act of September 2, 1937 (16 U.S.C. 669-669i), as amended: This Act, commonly referred to as the "Pittman-Robertson Act", provides to States for game and nongame wildlife restoration work. Funds from an excise tax on sporting arms and ammunition are appropriated to the Secretary of the Interior annually and apportioned to States on a formula basis for approved land acquisition, research, development and management projects and hunter safety programs.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Fish and Wildlife Coordination Act of March 10, 1934 (16 U.S.C. 661-66c), as amended: This Act authorizes the Secretary of the Interior to assist Federal, State and other agencies in development, protection, rearing and stocking fish and wildlife on Federal lands, and to study effects of pollution on fish and wildlife. The Act also requires consultation with the Fish and Wildlife Service and the wildlife agency of any State wherein the waters of any stream or other water body are proposed to be impounded, diverted, channelized or otherwise controlled or modified by any Federal agency, or any private agency under Federal permit or license, with a view to preventing loss of, or damage to, wildlife resources in connection with such water resource projects. The Act further authorizes Federal water resource agencies to acquire lands or interests in connection with water use projects specifically for mitigation and enhancement of fish and wildlife.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Food Security Act of 1985 (Title XII, Public Law 99-198, 99 Stat. 1354; December 23, 1985), as amended: This Act authorizes acquisition of easements in real property for a term of not less than 50 years for conservation, recreation, and wildlife purposes.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the requirement of an annual stamp for the hunting of waterfowl whose proceeds go towards the purchase of habitat for waterfowl and other wildlife. Duck stamps are also purchased for entry into some refuges, by conservationist and for stamp collections. Authorized the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or nonfederal, to the hunting of migratory birds.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

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National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Wildlife Refuge System Improvement Act of 1997: Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

North American Wetlands Conservation Act of December 13, 1989 (16 U.S.C. 4401-4412). Public Law 101-233 provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, U.S. and Mexico.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Water Resources Planning Act (1965): This Act establishes a cabinet-level Water Resources Council to study, coordinate and review water and related land resources requirements, policies and plans, and authorizes funding for states to plan and implement related programs.

Appendix F.
Finding of No Significant Impact and Environmental Action Memorandum

Tewaukon National Wildlife Refuge Complex
Final Comprehensive Conservation Plan

Three management alternatives for Tewaukon National Wildlife Refuge Complex were presented and evaluated as to their effectiveness in achieving Refuge purposes and their impact on the human environment. A "Custodial" alternative (discontinue management actions and close to public use), a "No Action" alternative (maintain the status quo), and an "Implement the CCP" alternative were assessed in the Environmental Assessment. Based on this analysis and comments received, I have selected the preferred alternative (implement the CCP) to be enacted on the Complex.

The preferred alternative was selected because it best meets the purposes of the Complex to manage for migratory birds, assist in the protection and restoration of native prairie habitats, provide public access for wildlife-dependent recreation, and provides environmental education opportunities related to fish and wildlife resources.

I find that the proposed action will not have a significant impact on the human environment in accordance with Section 102 of the National Environmental Policy Act and in accordance with the Service's Administrative Manual {30 Ams.9B(2)(d)} and concluded that an environmental impact statement is not necessary.

My rationale for this finding follows:

- The preferred alternative will not adversely impact endangered or threatened species or their habitats.
- The preferred alternative will not adversely affect or cause the loss or destruction of any archaeological or paleontological resources.
- The preferred alternative will have no adverse impact on wetlands or floodplains.
- The preferred alternative will have a positive effect on habitat and wildlife management, prairie wetland management, public use and recreation, and environmental education through restoration of grassland and wetland habitats, biological data gathering and analysis, facilities improvements, and effective program evaluation.
- The preferred alternative will have no negative impact on wildlife or wildlife habitat.
- No impact will occur on minority and low-income populations of communities.

Regional Director, Region 6
Fish and Wildlife Service
Denver, Colorado

9/22/00
Date

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United States Fish and Wildlife Service
Region 6
Environmental Action Memorandum

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that implementing the Tewaukon NWR Complex CCP will not have a significant environmental effect, based on the Tewaukon NWR Complex Environmental Assessment and Finding of No Significant Impact, and is therefore authorized to be implemented.

Regional Director, Region 6
Fish and Wildlife Service
Denver, Colorado

9/27/00
Date

Sept. 26, 2000
[illegible] McDermond
Regional Chief, National Wildlife Refuge System
Refuges and Wildlife

Date

Ron Shupe
Refuges Program Supervisor (ND/SD)

Sept. 26, 2000
Date

Sandra M. Siekaniec
Sandra M. Siekaniec
Refuge Manager
Tewaukon NWR Complex

Sept 25, 2000
Date

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Appendix G. Compatibility Determinations

Station Name: *Tewaukon National Wildlife Refuge Complex*

Date Established:

Tewaukon National Wildlife Refuge: June 26, 1945

Tewaukon Wetland Management District: August 1, 1958

Establishing and Acquisition Authorities: The Tewaukon National Wildlife Refuge, located in Sargent County in southeastern North Dakota, was originally established as an easement refuge by Executive Order No. 6910 on November 26, 1934. Tewaukon was then established as a Refuge under the authority of Public Land Order 286 on June 26, 1945; additional lands were added with the approval of the Migratory Bird Conservation commission, under the authority of the Migratory Bird Conservation Act.

Tewaukon Wetland Management District was authorized by Congress with the passage of Public Law 85-585 on August 1, 1958. The first tract of land acquired in the District was in 1961. Additional lands were added to the District under the authority of the Migratory Bird Hunting and Conservation Stamp Tax. The Tewaukon WMD is comprised of approximately of 105 Waterfowl Production Areas (WPA's) (over 14,000 acres), 35,000 acres of wetland easements, 10,400 acres of grassland easements, and 112 wetland and 45 acres of grassland in FmHA easements located in Richland, Ransom, and Sargent Counties, North Dakota. Enabling legislation includes: the Migratory Bird Hunting and Conservation Stamp Act (16 USC 718-718h, 48 Stat. 452), and the Wetlands Loan Act (16 USC 715k-3 - 715k-5; Stat. 813). Funds appropriated under the Wetlands Loan Act, are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act (16 USC 715 et seq.; 45 Stat. 1222), as amended, and since August 1, 1958, (P.L. 85-585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Purpose(s) for which Established: For lands acquired under the Executive Order, dated April 24, 1943, the purpose of the acquisition is to reserve and set apart certain public lands for the use of the Department of the Interior as a refuge and breeding ground for migratory birds and other wildlife.

- For lands acquired under Public Land Order 286, dated June 26, 1945, the purpose of the acquisition is "... as a refuge and breeding ground for migratory birds and other wildlife..."
- For lands acquired under the Migratory Bird Conservation Act, 16 U.S.C. S 715d, as amended, the purpose of acquisition is "... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. S 715d (Migratory Bird Conservation Act)
- For District lands acquired under the Public Law 85-585, dated August 1, 1958, the purpose of the acquisition is to assure the continued availability of habitat capable of supporting migratory bird populations at desired levels.
- For lands acquired under the Migratory Bird Hunting and Conservation Stamp Tax, 16 U.S.C. S 718, as amended, for the purpose: " ... as Waterfowl Production Areas" subject to go ... all of the provisions of such Act [Migratory Bird Conservation Act] ... except the inviolate sanctuary provisions ... 11 16 U.S.C. S 718c (Migratory Bird Hunting and Conservation Stamp Tax).

National Wildlife Refuge System Mission: The Mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United Sates for the benefit of present and future generations of Americans."

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Description of Proposed Use: Wildlife Observation, Wildlife Photography, Interpretation and Environmental Education

Provide opportunities that support wildlife-dependent recreation, education, and outreach to the public. From general observations conducted in the Refuge visitor center and along Lake Tewaukon and Sprague Lake, it is estimated that over 20,000 visitors utilize Tewaukon National Wildlife Refuge annually for wildlife/wildland observation, photography, interpretation/education, picnicking, and hiking. The majority of the use is focused on the east side of County Road 12 which includes the visitor center, Lake Tewaukon, the Prairie Lake Auto Tour, several picnic areas, and a scenic overlook. The District has substantially less visitation for the above uses (300 visits). A recent addition of a prairie walking trail at the Hartleben WPA is expected to increase this use.

Interpretation and environmental education services are provided when staff are available and include talks or guided tours for groups such as school groups, scouts, 4-H clubs, and special groups. The public is invited to participate in Refuge open houses and other events throughout the year.

The Comprehensive Conservation Plan proposes to continue with the above uses and add the following to improve interpretation and access for visitors:

- Develop a wildlife observation platform and interpretive hiking trail.
- Improve visitor center availability to visitors with staff and expansion of hours of operation during times of high use.
- Improve and expand the visitor center displays and group presentation area.
- Develop new Refuge brochures and update old brochures to new Service standards.
- Develop a tallgrass prairie interpretive trail near the visitor center.
- Develop and maintain a web site for the Complex.

Availability of resources:
Currently, sufficient resources are available to continue the existing wildlife-dependent recreation. The additional items to be added from the Comprehensive Conservation Plan are tied to funding requests in the form of the attached RONS projects (Appendix J).

Anticipated impacts of the use:
Some disturbance to wildlife will occur in areas of the Refuge frequented by visitors. However, with limiting of areas open to public use and Refuge road closures at specific times of the year, these impacts can be lessened (See CCP Wildlife Disturbance Section). Monitoring of activities and their impacts and limiting the location and time of year for wildlife-dependent visits will maintain use at an acceptable level.

Justification:
Based upon biological impacts described in the CCP and in the Environmental Assessment, it is determined that wildlife observation, wildlife photography, interpretation, and environmental education within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for the public to develop an understanding and appreciation for wildlife when found compatible. The four uses are identified as priority public uses in the National Wildlife Refuge System Improvement Act of 1997 and will help meet that goal at the Tewaukon NWR Complex with only minimal conflicts with the wildlife conservation mission of the Refuge System.

Determination: Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education are compatible.

Stipulations necessary to ensure compatibility:

- During peak concentrations of migratory waterbirds, areas will be closed and access limited to minimize any wildlife disturbance.
- Monitor use, regulate access and maintain necessary facilities to prevent habitat degradation in high public use areas.
- Monitor levels of use and effects on wildlife.
- Implement additional educational and interpretive programs that discuss wildlife disturbance.

J.1

Description of proposed use: Recreational Fishing

Lake Tewaukon and Sprague Lake are utilized as open water rest areas for migratory birds. A secondary use is public sport fishing according to State and Federal Regulations. Year-round bank fishing is allowed with seasonally limited access and boat fishing from May 1 through September 30 to avoid conflicts with migratory bird use of the Lakes. Visitors participating in this use at the Refuge are estimated at 9,000 per year. Facilities available include five boat ramps (two are accessible), picnic areas, fishing docks, informational kiosks, parking areas, and rest room facilities. A kids fishing day is held in conjunction with the Tewaukon Field Day sponsored by the ND Extension Service. A fishing tournament is held each year by local sportsmen's groups with proceeds going towards Lake developments. The CCP does not propose any additional improvements beyond maintaining the existing use. The District Waterfowl Production Areas are legally open to fishing as per their establishing legislation and the Federal Code of Regulations.

Availability of resources:

Currently, sufficient resources are available to continue the existing recreational fishing.

Anticipated impacts of the use:

Fishing and other human activities cause disturbance to wildlife (see CCP Section on Wildlife Disturbance). Impacts could occur during waterbird nesting season. However, the physical characteristics of these lakes and their shorelines make them poor areas for breeding waterbird populations.

Justification:

When Refuge and flowage easements were secured in the 1930s, it was with the understanding that recreational fishing use of the lake would be continued and improved. Recreational fishing, on Lake Tewaukon and Sprague Lake, causes minimal disturbances for waterbirds and benefits other wildlife species.

Based upon biological impacts described in the CCP and in the Environmental Assessment, it is determined that recreational fishing within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for public fishing when compatible, and it is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997. Recreational fishing at the Tewaukon NWR Complex will support this goal with only minimal conflicts with the wildlife conservation mission of the Refuge System.

Determination: Recreational fishing is compatible.

Stipulations necessary to ensure compatibility:

- Both lakes will be closed to boat fishing and open to limited bank fishing during the spring and fall migrations periods for waterbirds.
- Parking lot, road, trail, and related access facilities will be maintained as necessary to prevent erosion or habitat damage.
- No additional lakes or marshes on the Refuge will be open to fishing.
- Boat use will be limited to recreational fishing (no jet skis, power boating, etc.).
- Limit access for ice fishing to established areas (boat ramps and normal County and township roads).
- Waterfowl production areas will maintain only natural fish populations (no stocking).
- Monitor existing use to ensure that facilities are adequate and disturbance to wildlife continues to be minimal.

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Description of proposed use: Recreational Hunting

Tewaukon National Wildlife Refuge is open to pheasant hunting and white-tailed deer hunting in the fall. Visitation for these activities is estimated at 4,000. Parking areas are made available for this use. The District Waterfowl Production Areas are legally open to hunting as per their establishing legislation and the Federal Code of Regulations. The CCP does not propose any additional improvements beyond maintaining the existing use.

Availability of resources:

Currently, sufficient resources are available to continue the existing recreational hunting.

Anticipated impacts of the use:

Recreational hunting will remove individual animals from the wildlife populations ensuring that carrying capacity is not exceeded (possibly impacting other species habitat). Some wildlife disturbance will occur during the hunting season.

Justification:

Hunting is a legitimate wildlife management tool that is used to manage deer populations. This is necessary to ensure that populations above the carrying capacity are controlled to reduce impacts to habitat and other wildlife that also depend upon that habitat. Some wildlife disturbance will occur during the hunting seasons. Proper zoning, regulations, and Refuge seasons will be designated to minimize any negative impact to wildlife populations using the Refuge. Based upon biological impacts presented in the CCP and in the Environmental Assessment, it is determined that recreational hunting within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for public hunting when it is found to be compatible, and it is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997. Recreational pheasant hunting on the Tewaukon NWR Complex will support this goal, with only minimal conflicts with the wildlife conservation mission of the Refuge System and purposes of the Refuge.

Determination: Recreational hunting is compatible.

Stipulations necessary to ensure compatibility:

- Use of nontoxic shot is required on the Refuge for pheasant hunting and the District for waterfowl hunting and upland game hunting to minimize exposure to lead by waterfowl.
- Hunting must be in accordance with Federal and State regulations (seasons predominately open after migrating waterbirds have left the Complex).
- Hunting on Tewaukon NWR will take place in a manner that will minimize disturbance to migrating waterbirds.
- Hunting will be evaluated to provide a safe hunt (reduce the conflict of the variety of hunting seasons).
- The Refuge deer hunt will be coordinated with the ND Game and Fish Department to determine number of permits to manage the populations.
- Monitor these uses to assure they do not interfere with and are compatible with other wildlife-dependent recreational activities.

Description of proposed use: Trapping

Provide for trapping on the Tewaukon National Wildlife Refuge and on District lands. Provide for spring predator trapping to improve upland nesting bird success on the Complex. The District Waterfowl Production Areas are legally open to recreational trapping according to State regulations as per their establishing legislation and the Federal Code of Regulations.

Availability of resources:

Currently, insufficient funding and staffing exists to manage the recreational trapping and spring predator trapping on the Complex. Trapping funding requests are described in the Comprehensive Conservation Plan as Refuge Operation Needs System (RONS) projects (Appendix J). Spring predator trapping requires staff, funding of contracted trapper, monitoring of predator populations, and upland bird production.

Anticipated impacts of the use:

Trapping removes individual animals from wildlife populations, and predator populations are temporarily reduced up to and during the nesting season. Spring predator trapping allows for the increased nesting success of upland nesting birds. Direct mortality would occur of target animals, some vegetation trampling by personnel, and some minor increase in general wildlife disturbance in trapping areas due to human and vehicular traffic. The possibility of injury exists to nontarget wildlife that are caught in traps such as badgers, weasels, rabbits, domestic dogs, and feral cats.

Justification:

Recreational trapping removes excessive wildlife populations and provides public recreational opportunity. Spring predator trapping will benefit upland nesting birds, including many species of waterfowl, when predator populations are reduced during the nesting season. Long-term negative effects to these predator populations will not take place as conducted trapping activities cannot feasibly remove enough animals to permanently impact these populations. An environmental assessment of trapping is available at the Refuge office for review (U.S. Fish and Wildlife Service 1994).

Determination: Trapping is compatible with additional funding.

Stipulations necessary to ensure compatibility:

- Trapping will be conducted in a manner that will remove only targeted upland nest predators.
- Recreational trapping will occur within regular State seasons and will not conflict with other public uses.
- Trapping for predators outside of the regular season will be coordinated with the ND Game and Fish Department.
- Detailed trapping records will be maintained for Refuge trappers, staff trappers, and contracted trappers.
- No trapping will take place in areas of high public use especially surrounding Lake Tewaukon and Sprague Lake.
- No exposed bait would be placed near traps that might attract eagles or other raptors.
- Traps used will be legal traps as per the State of North Dakota and snares for specialize spring trapping.
- Traps must be checked at least once every 24 hours.
- Monitoring of nest success in areas targeted for predator removal to determine effectiveness and need for next years trapping (only when nest success falls below 30 percent Mayfield will trapping be conducted - see section on Waterfowl in CCP).

Description of proposed use: Management Tools with Economic Uses: Farming, Grazing, Haying

Continue upland management activities that are conducted under permit by private individuals such as haying, grazing, and farming. Currently, these economic uses are used as management tools to manage habitat for wildlife. Up to 500 acres are farmed each year in the Complex including Refuge fields and food plots on WPA's. Cattle grazing is currently used as a management tool on the Gainor WPA (about 800 acres) and sheep grazing is used on the Refuge and District to control leafy spurge (about 200 acres). Haying is used on the Refuge and District to improve grassland conditions with approximately 450 acres hayed per year by cooperators. The CCP proposes to maintain the number of crop acres and may include increasing grazing and haying if these tools are required for improving habitat. Projects in the CCP will improve the administrative and monitoring aspects of these programs.

Availability of resources:

Current resources are stretched thin to maintain existing programs. If additional staff support was available, these programs could be expanded to utilize these tools more effectively and monitoring could be accomplished. RONS Project Number 1, listed in Appendix J, would accomplish the goals of the CCP and improve the existing program.

Anticipated impacts of the use:

Current management affects approximately 10 percent of the upland habitat annually. This would increase to approximately 15 percent under the CCP. This management is not evenly distributed over the entire Complex, and the percentage of upland receiving optimum management is considered to be much less that 10 percent. General habitat conditions on the Complex would gradually deteriorate due to long periods of non-prescribed rest. While some wildlife disturbance does occur with these activities, the benefits to wildlife far outweigh these disturbances. No cultural resources would be impacted. No impact to endangered species should occur; however, habitat suitability for the Dakota skipper, regal fritillary, and white lady's slipper would continue to deteriorate without some form of defoliation treatment.

Justification:

Upland habitat conditions would deteriorate without the use of a full range of upland management tools. Exotic and noxious weed species would increase, and habitat diversity would decrease causing a decline in wildlife diversity. Migratory bird production and diversity would decrease as habitat suitability for these species declined. Consumptive and non-consumptive wildlife oriented recreational opportunities would decline as wildlife diversity and populations decreased. Although the prescribed management techniques listed in the proposed use are not adequate in scope to prevent such declines from taking place in all upland habitat sites, the limited upland management which does take place will diversify and improve treated grasslands. An environmental assessment that evaluates upland habitat management (including these uses) is available at the Refuge office for review (U.S. Fish and Wildlife Service 1994).

Determination: Farming, Grazing, Haying are compatible when used as management tools.

Stipulations necessary to ensure compatibility:

- General and special conditions are required for each permit to ensure consistency with management objectives.
- Farming permittees are restricted to a list of approved chemicals which are less detrimental to wildlife, use only necessary amount to control problem spots, and report their use yearly.
- Farming permittees must leave a portion of the crop for wildlife use.
- Farming permittees must not cut or plow under clover until after July 15 and alfalfa after July 1.
- Farming permittees must obtain permission from the Refuge Manager to work in the fields after opening of waterfowl season.
- Grazing permittees will be restricted to after June 1 to avoid some disturbance to nesting birds.
- Cattle grazing permittees are required to follow a short-term rotational grazing system to provide appropriate stimulation of grasses.
- Grazing permittees must comply with State Livestock Health Laws.
- Haying will be restricted to after July 15 to avoid disturbance to nesting birds.
- Haying permittees are required to report and mow noxious weeds in their areas.

Signatures:

Project Leader:

Sept 25, 2000

Sandra M. Siekaniec
Refuge Manager
Tewaukon National Wildlife Refuge Complex
Date

Concurrence:

Sept 26, 2000

Ron Shupe
Refuges Program Supervisor (ND/SD)
Date

Sept. 26, 2000

Ken McDermond
Regional Chief, National Wildlife Refuge System
Date

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Appendix H. ND/SD Draft Ecosystem Goals and Objectives

Grassland Habitat Goals and Objectives

Mission: Protect, restore, and maintain North and South Dakota's native prairie and other grasslands to ensure its diversity and abundance of native flora and fauna.

Goal A: Prevent degradation and conversion of native prairie grassland to other uses.

Objectives:

- Locate, categorize, evaluate, and map existing native grassland within the Dakotas for baseline information within the next five years.
- Protect grasslands by easement on 50,000 acres of grassland per year for the next 10 years.
- By the year 2003, develop and implement public education programs to promote awareness and advocacy for native prairie.
- Maintain and develop partnerships to protect 10,000 acres native prairie over the next 10 years.

Goal B: Establish and maintain a network of large prairie grassland including native and planted grasslands on public and private lands.

Objectives:

- Promote and implement prescribed burning and rotational grazing on a minimum of 20 percent of private lands to enhance and maintain healthy native prairie.
- By the year 2003, develop a public education program on types of defoliation and importance of proper defoliation of native prairie.
- Over the next 10 years, develop partnerships to enhance and manage native prairie, including invasion by alien species.
- Develop criteria within six months and identify within the next five years the most biologically significant landscape to meet the needs of trust species and species of special concern.
- Develop criteria and treat a minimum of 20 percent of agency-owned grasslands annually.

Goal C: Reduce fragmentation effects to flora and fauna in native prairie communities. Maintain and develop corridors between large prairie conservation reserves to facilitate dispersion of native species and enhance gene flow.

Objectives:

- Develop an education program by the year 2003 to help the public understand why corridors are important.
- By 2003, develop management plans for these corridors to ensure they are properly managed to maintain the health and vigor of the plants.
- By 2003, develop statewide plans to determine where corridors are needed to connect blocks of native prairie.
- Develop and maintain corridors between large grassland landscape within five years of identification to reduce fragmentation. In addition, create public support for seeding native grasses and forbs along road rights-of-way.
- Use road rights-of-way, where applicable, to develop corridors by planting native grasses and forbs.
- Seek other avenues to develop, retain, and enhance corridors where road rights-of-way will not be sufficient.
- Over the next 10 years, maintain and develop statewide partnership programs to get people involved in identifying methods and locations for corridors, and their management.

Goal D: Protect, restore, and enhance trust species and species of special concern.

Objectives:

- Identify what species are in trouble and why by the year 2003.
- Develop at least three management approaches within the next 10 years for each species not covered at the landscape level.
- Develop education programs of why these species are important to conserve, what approaches will be taken for their recovery, and what the public can do to help.
- Develop statewide partnership programs to get people involved in species recovery.

Goal E: Maintain and increase planted grasslands.

Objectives:

- Within the next two years, identify the key areas to maintain and to increase planted grasslands.
- By 2003, develop a plan to connect the different corridors.

Goal F: Protect native prairie from industrial/chemical contamination.

Objectives:

- Identify what contaminants are entering native prairie and what adverse impact each contaminant may have on native prairie.
- Develop a plan on how to prevent and/or reduce further contaminants from entering native prairie.
- Develop a public education program explaining what contaminants are out there, what impact they are having, how to reduce or eliminate these, and how the public can help.

Wetlands and Watershed Goals and Objectives

Mission: Protect, restore, manage, and create wetlands and their watersheds in North Dakota and South Dakota to ensure the abundances of fish and wildlife species for the benefit of the American public.

Goal A: Increase recognition of wetland values by the various publics (community, conservation, communication, Congressional, and corporate entities) and develop a wetland advocacy.

Objective:

- Over the next three years, implement informational and educational opportunities that develop advocates for wetland conservation.

Goal B: Prevent or reduce the conversion or degradation of wetland habitats, and restore, replace, and enhance wetland habitats, qualities, and functions for trust species and species of concern.

Objectives:

- Annually protect 10,000 acres of wetlands, and 20,000 acres of uplands through fee, easement, and PFFW agreements for the next 10 years in North Dakota.
- Assist partners and other agencies in protecting, creating, restoring, managing, and enhancing 5,000 acres of wetlands and associated uplands annually in North Dakota.
- Develop partnerships with neighbors and local conservation organizations to annually manage 20 percent of Service uplands for trust species and species of concern.
- On a statewide (ND) basis, assure that easement violations are brought to conclusion within a one year period.
- Over the next 10 years, prepare easement maps for all North Dakota wetland easements.

Goal C: Maintain and restore the quality and health of existing prairie wetlands in order to preserve their natural productivity, longevity, and function.

(Objectives 1 and 2, Goal B, support this)

Goal D: Protect the water supply and property interests of wetlands on Service lands or easements.

Objective:

- File for water rights on eligible Service properties or easements over the next 10 years.

Riparian Goals and Objectives

Mission: Maintain, restore, and enhance riparian, floodplain, and watershed functions to river systems for the benefit of trust resources, Fish and Wildlife Service properties, and the American public.

Goal 1: Reduce the conversion of riparian habitats.

Objectives:

- Inventory and determine the quality of riparian habitats within North and South Dakota which influence National Wildlife Refuges by 2003 to provide baseline information.
- Implement a public education program in North and South Dakota by 2003 to promote a public appreciation and understanding for the benefits of and the threats to riparian habitats.

Goal 2: Maintain, restore, or enhance riparian habitats, quality, functions, and biotic communities.

Objectives:

- Use existing programs and opportunities in North and South Dakota by 2008 to provide river buffer zones on 10 percent of the 2 to 5 year floodplain 50 miles upstream of National Wildlife Refuges.
- Facilitate the location and control of all purple loosestrife populations upstream of national wildlife refuges in North and South Dakota by 2003 to maintain quality habitat.
- Use existing programs and opportunities in North and South Dakota by 2003 to restore or enhance the functions of oxbow wetlands within 50 miles of national wildlife refuges.
- National wildlife refuges with river impoundments in North and South Dakota shall collect water quality and biotic community data from inflows, outflows, and impoundment pools to determine baseline parameters by the year 2003.
- Support State efforts to monitor water quality and biotic communities in impaired waters in North and South Dakota to promote compliance with State water quality standards.
- Conserve, restore, and enhance aquatic systems and fish populations in North and South Dakota to provide increased recreational opportunities by increasing fishing access, education and outreach, and partnership opportunities by 2003.

Goal 3: Conserve and recover endangered, threatened, and species of special concern.

Objectives:

- Inventory endangered, threatened, and species of special concern along riparian corridors in North and South Dakota by 2001 to provide baseline information.
- Develop strategies for conserving and recovering endangered, threatened, and species of special concern along riparian habitat in North and South Dakota by 2003 to prevent any species from becoming listed.

Goal 4: Conserve, restore, enhance and create habitat resources in watersheds that influence the quality and quantity of water flowing into rivers and streams.

Objectives:

- Use existing oversight, coordination, and technical assistance to promote sound watershed management on an additional 10,000 acres in North and South Dakota by 2003.
- Use existing programs and opportunities in North and South Dakota by 2003 to conserve, enhance, or restore grasslands and wetlands in the immediate vicinity of national wildlife refuges to provide quality water runoff.

Missouri River Goals and Objectives

Goal 1: Reestablish the natural form and function and prevent degradation for prioritized riverine sections.

Objectives:

- Achieve a more ecologically beneficial hydrograph below Ft. Peck, Garrison, Ft. Randall, and Gavins Point Dams by working with COE, States, and other stakeholders by 2000.
- Work with the COE, States, and stakeholders to achieve compatible ecologically beneficial water quality parameters including temperature, sediment transport, and turbidity by 2003.
- Work with local zoning authorities and regulators to develop and implement policies that influence floodplain development and bank stabilization to maintain/restore river functions by 2003.
- Increase functional habitat base in prioritized riverine sections through restorations, creations, and modification/enhancement where opportunities allow. Attempt one major project per year beginning in 1999.
- Continue an environmental contaminants presence on the Missouri River that monitors conditions, identifies issues and problem areas, and develops strategies for rehabilitation.
- Promote restoration of river functions and values through proactive outreach.

Goal 2: Conserve and recover endangered, threatened, and species of special concern in riverine and impounded reaches.

Objectives:

- Augment current pallid sturgeon populations in: 1) Missouri and Yellowstone Rivers above Lake Sakakawea, and 2) below Ft. Randall through hatchery production to develop a genetically sound natural population structure by 2004.
- Achieve a 5-year average fledged success rate of 0.79 for 325 pairs of least terns, and 1.44 for 350 pairs of piping plovers below Garrison and Gavins Point Dams by 2004.
- Develop recovery actions or conservation plans for the sicklefin chub and the sturgeon chub by 1999, and seek funding and implementation of plans by 2000.
- Establish priority and complete status reviews for species of special concern, such as the blue sucker, flathead chub, western silvery and plains minnows, initiating one species per year beginning in 1999.

Goal 3: Fulfill commitments for mitigation of fishery resources brought about by construction of the mainstem dams.

Objectives:

- Through hatcheries, management, and conservation, support State fisheries objectives for the Missouri River and its impoundments annually.

Appendix I. Partnerships

The Tewaukon Complex staff works with a variety of organizations and individuals on natural resource projects such as the following:

Drift Prairie Wetland Enhancement North American Wetland Conservation Act Grant cooperators:

- ✓ North American Wetlands Conservation Council
- ✓ ND Game and Fish Department
- ✓ Ducks Unlimited
- ✓ The Nature Conservancy
- ✓ North Dakota Wetlands Trust
- ✓ Delta Waterfowl Foundation
- ✓ Barnes County Wildlife Federation
- ✓ Cass County Wildlife Club
- ✓ private landowners

North Dakota Jr. Duck Stamp Contest contributors:

- ✓ Cogswell Gun Club
- ✓ Tewaukon Rod and Gun Club
- ✓ Red River Sportsmen's Club
- ✓ Hannaford Conservation and Wildlife
- ✓ Rutland Sportsmens Club
- ✓ Barnes County Wildlife Federation
- ✓ American Foundation for Wildlife
- ✓ ND Chapter of The Wildlife Society
- ✓ Richland County Wildlife
- ✓ Cass County Wildlife Club
- ✓ United Sportsmen of Jamestown
- ✓ Falkirk Mining Company
- ✓ Lake Region Improvement Club
- ✓ Bottineau County Wildlife Federation
- ✓ Dakota Territory Gun Collectors

Fishery Habitat Improvement:

- ✓ ND Game and Fish Department
- ✓ Tewaukon Rod and Gun Club
- ✓ Cogswell Gun Club
- ✓ Rutland Sportsmens Club

U.S. Department of Agriculture:

- ✓ Natural Resources Conservation Service - easements, EQUIP, and CRP programs
- ✓ Farm Service Agency - easement program
- ✓ APHIS-depredation program
- ✓ U.S. Forest Service

U.S. Bureau of Reclamation:

- ✓ Kraft Slough Acquisition and Management

ND Game and Fish Department:

- ✓ wildlife surveys, habitat management, wildlife law enforcement

Partners For Fish and Wildlife program:

- ✓ private landowners

Sargent County Extension Service:

- ✓ youth programs, community projects

Water Quality Monitoring:

- ✓ Sisseton-Wahpeton Sioux Tribe
- ✓ North Dakota Department of Health
- ✓ Wild Rice Conservation District

Adopt-A-WPA:

- ✓ Sargent County Pheasants Forever
- ✓ Red River Sportsmen's Club

Annual Tewaukon Fishing Derby and projects:

- ✓ Cogswell Gun Club
- ✓ Tewaukon Rod and Gun Club

Other cooperators and projects include: local law enforcement agencies; The Wahpeton Zoo, conservation districts (no-till drill, native seed harvest); Ducks Unlimited (water control structures, predator fences); The North Dakota Wetlands Trust (grassland easements, water control structure repair); The Delta Waterfowl Foundation (predator research); Rural Fire Districts (wildfire suppression on- and off-Refuge); various universities (research); and the General Federation of Women's Cultura Club of Hankinson (native prairie restoration, walks, and nature trail).

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Appendix J. RONS and MMS Projects

The two following tables show the top 12 RONS projects and the top 11 MMS projects associated with the CCP. The "Goal or Objective" column on the RONS table links back to the Goals, Objectives, and Strategies section in the CCP. For more information on these projects, please contact the Refuge Manager.

RONS Projects						
RONS No.	**Goal or Objective (R=Refuge; D=District; E=Easement)**	**Project Description**	**Construction Funding**	**First Year Need**	**Recurring Annual Need**	**FTE***
97020	R1.3, D1.5	Upland restoration for grassland nesting birds.		$209,000	$100,000	1.5
97005	R1.1, R1.2, R1.3, R1.4, R1.5, R1.7, R1.10, R1.11, R2.1, R2.3, R2.4, R2.7, R2.8, R3.1, R4.1, D1.1, D1.2, D1.5, D2.5, D3.2, D3.4, D3.6, D3.7	Biological information collecting and monitoring to support management of wildlife and habitat.		$254,000	$133,000	2.0
97009	R1.10	Nonnative plant control to improve habitat for wildlife.		$118,000	$60,000	1.0
97001	R1.1, R1.2, R1.4, R2.4, R3.1, D1.1, D1.2, D1.6, D2.2, D3.2, D3.4	Tallgrass restoration for declining grassland nesting birds.		$325,000	$92,000	.5
97007	R1.6, R2.11, R2.12, R2.13, R4.1, R4.3, R4.8, D1.4, D1.10, D4.1, D4.2, D4.4, E1.1, E1.3	Protection of resources including wetlands, grasslands, and safety of public.		$270,000	$88,000	1.0
97002	R5.1, D1.3, D1.11, D3.1, D6.1	Assistance to private landowners to improve wildlife habitat.		$185,000	$103,000	1.0
98033	R1, R2, R3, R4, R5, D1, D2, D3, D4, D6, E1	Improvement of staff facilities and support.	$1,000,000	$155,000	$64,000	1.0
97008	R4.2, R4.3, R4.4, R4.5, R4.6, R4.7, R4.8, R4.9, R5.1, R5.2, D4.1, D4.2, D4.3, D4.4, D6.1	Improvement of public education and recreation facilities and staff.	$1,500,000	$515,000	$118,000	1.0
98042	R1.1, R1.2, R1.4, R1.5, R1.10, R1.11, R1.12, D1.1, D1.2, D1.6, D1.7, D3.1, D3.3, D6.1	Fire management program to improve wildlife habitat and protection of wildfires.		$242,000	$93,000	1.0
98040	R4.5, R4.6, R4.8, R4.9, R5.1, D4.2, D4.3, D4.4, D6.1	Protection, documentation, and interpretation of existing cultural resources.		$77,000	$20,000	-
98027	R1.5, R1.6, D1.8, D1.9, D1.10	Protection and clarifying of water rights on Complex to support water bird needs.		$467,000	$30,000	-
98003	R2.1, D2.1	Predator control to improve grassland bird nesting success on the complex.		$382,000	$55,000	-
TOTALS			$2,500,000	$3,190,000	$956,000	10.0
*FTE = Full-time Equivalency						

MMS Projects			
MMS No.	**Goal or Objective (R=Refuge; D=District; E=Easement)**	**Description**	**Cost**
89013	R1.1, R1.2, R1.3, R1.4, R1.11, R1.12, D1.1, D1.2, D1.5, D1.6	Replace deteriorated and worn disk needed for preparing seedbed for planting of natives and for creating fire lines.	$37,000
89008	R1.2, R1.5, R1.11, R1.12	Replace deteriorated heavy equipment (dozer) used to assist in repairs to flood damage and 12-year maintenance backlog.	$148,000
99043	R1.2, R1.4, R1.10, R4.5, R5.1, D1.2, D1.5, D1.6, D4.2, D6.1	Replace worn 1986 1-ton diesel truck.	$45,000
00084	R1.2, R1.3, R1.5, R1.10, R4.5, R5.1, D1.2, D1.5, D1.6, D4.2, D6.1	Replace worn 1979, 18,000 lb 5th wheel trailer used to haul fence supplies, culverts, and small equipment.	$10,000
97003	R4, R5	Replace 12 worn and faded public safety signs. These signs guide our visitors to points of interest and interpret management activities. They also address many important safety concerns on the Refuge.	$29,000
98031	R2.1	Replace existing predator exclosure fence with a chain link fence.	$100,000
00087 A	R1.5	Replace water control structure in Pool B and repair existing dike.	$50,000
00087 B	R1.5	Replace water control structure in Pool C and repair existing dike.	$50,000
99039	R1, R2, R3, R4, R5, D1, D2, D3, D4, D5	Replace worn maintenance truck (1980 Ford).	$35,000
98002	R4, R5	Replace Refuge map display located in visitor center. This map is used extensively to orient visitors to the Refuge natural resource features, recreational facilities and opportunities, roads, trails, and boundaries.	$30,000
99045	R1.10	Replace worn 1991 Dodge utility 1-ton used for spraying noxious weeds on the Refuge and District to comply with State regulations.	$45,000

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Appendix L. Waterfowl Production Area Priority Tables

WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Englevale Complex	Ransom	1,187.75	68 pair		High
Smith/Tanner/Buckmiller	Ransom	646.62	68 pair		High
Strander/Skonseng/Peterson	Ransom	290.30	45-68 pair	Tallgrass prairie	High
McCann/McGill/Isley	Ransom	324.93	45-68 pair	Tallgrass prairie	High
Weaver/Coit/Schiffner	Ransom	403.53	68 pair	Tallgrass prairie	High
Biggs/Berndt	Richland	479.35	27-45 pair	Tallgrass prairie Rare butterflies	High
Biggs/Anderson/Anderson/ Larson/Swanson/Osthy	Richland	609.47	27-45 pair	Tallgrass prairie	High
Krause/Ahrens/Arndt	Richland	117.85	45-68 pair	Tallgrass prairie	High
Bladow	Richland	275.97	45-68 pair		High
Gunness/Boldt/Hentz/Elsen	Richland	657.10	27-45 pair	Tallgrass prairie Rare butterflies White lady's slipper	High
Hartleben/Aaser/Prochnow	Richland	1,627.23	27-45 pair	Tallgrass prairie Rare butterflies White lady's slipper	High
Kuehn	Richland	317.52	68 pair	Tallgrass prairie	High
Willprecht/Nechas/Hegar	Richland	240.96	45 pair		High
Chris Schuler/East Leack	Richland	240.00	45 pair	Tallgrass prairie	High
Wollitz/Paetzke/Stenson	Richland	506.46	45-68 pair		High
Palensky/Widmer	Sargent	449.64	93-113 pair	Tallgrass prairie	High
Evanson	Sargent	169.52	93 pair		High
Evanson/Anderson	Sargent	198.80	93 pair		High
Gainor	Sargent	843.96	45 pair	Tallgrass prairie	High
Krause	Sargent	200.00	68 pair	Tallgrass prairie Rare butterflies	High
Nelson/Klefstad	Sargent	390.16	68 pair		High
Palensky/Wyum/Kaske	Sargent	238.83	68 pair		High

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WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Bilkre/Chose	Ransom	129.89	27-45 pair		Moderate
Compson	Ransom	162.08	27-45 pair		Moderate
Warner	Ransom	160.00	27 pair		Moderate
Wiltse/Kaspari	Ransom	239.16	27-45 pair		Moderate
Ford	Richland	128.94	68 pair	Tallgrass prairie small tract	Moderate
Gaukler	Richland	162.71	45 pair		Moderate
Smith	Richland	159.81	68 pair		Moderate
Vogeler/Haaland	Richland	162.41	27 pair		Moderate
Asche	Sargent	159.44	68 pair		Moderate
Bauer	Sargent	322.52	45 pair		Moderate
Even	Sargent	84.86	68 pair		Moderate
Litchfield	Sargent	156.68	45 pair		Moderate
Mahrer	Sargent	119.20	68 pair		Moderate
Olson/BN	Sargent	157.37	68 pair		Moderate
Olson, H.	Sargent	159.24	68 pair		Moderate
Saunders	Sargent	143.29	68 pair		Moderate

WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Arneson	Ransom	40.00	27 pair		Low
Bachmann	Ransom	100.19	68 pair		Low
Bosder	Ransom	99.78	45 pair		Low
Bueling, A.	Ransom	55.08	27-45 pair		Low
Bueling, L.	Ransom	56.28	27-45 pair		Low
Carlson	Ransom	43.62	58 pair		Low
Dick, L.	Ransom	32.11	45 pair		Low
Kaspari, L.	Ransom	56.00	27 pair		Low
Metzen	Ransom	52.50	27-45 pair		Low
Reinke/Anderson	Ransom	84.36	45 pair		Low
Shelver	Ransom	85.32	27 pair		Low
Boehning	Richland	97.06	45 pair		Low
Korth	Richland	47.46	27-45 pair	Tallgrass prairie small tract	Low
West Lourk	Richland	80.00	45 pair		Low
Novetske	Richland	60.08	45 pair		Low
Lunstad	Sargent	32.93	68-93 pair		Low

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Appendix M: Section 7 Consultation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Allison Banks, Refuge Planner
Telephone Number: 303-236-8145, ext. 626
Date: 8/18/00

I. Region: 6

II. Service Activity (Program):

Division of Realty, Branch of Land Acquisition and Refuge Planning

III. Pertinent Species and Habitat:

A. Listed species and/or critical habitat within the action area:
Bald eagle, gray wolf, whooping crane, and western prairie fringed orchid. For a list of other species of management concern please see Draft CCP attachment, Endangered Species sections, pages 64 and 98-103.

B. Proposed species and/or critical habitat within the action area:
None

C. Candidate species within the action area:
None

D. Include species/habitat occurrence on a map:
None of these species occur regularly on Service lands. The bald eagle is seen passing through during spring and fall migration. Gray wolves occasionally disperse from Minnesota and have been recorded for counties within the Wetland Management District. For a map of the Complex please see Map #15 in the Draft CCP

IV Geographic area or station name and action:

Tewaukon National Wildlife Refuge Complex Comprehensive Conservation Plan

V Location: (please see map attachments)

A. Ecoregion Name:
Prairie Pothole Ecoregion, Hudson's Bay Ecosystem and Mainstem Missouri Ecosystem

B. County and State:
Ransom, Richland, and Sargent Counties, North Dakota

C. Section, township, range or latitude/longitude:
The Complex consists of 22,362 acres of fee title tracts scattered throughout 3 counties and 45,386 acres of easement interests on many smaller tracts. Please see Map #2 and #15 in the Draft CCP for locations.

D. Distance (miles) and direction to nearest town:
Refuge headquarters is 5 miles south of Cayuga, North Dakota. Waterfowl Production Areas (fee title ownership), wetland and grassland easement interests and the Refuge itself are located throughout 3 counties. Please see page 15 of the Draft CCP for locations.

E. Species/habitat occurrence:
The bald eagle is regularly sighted during fall and spring migrations, though no nesting occurs on the Complex. Nesting attempts have been verified on private lands within the District.

The western prairie fringed orchid is found in native, calcareous prairies and sedge meadows. Currently, the largest population exists on the Sheyenne National Grasslands in Ransom and Richland Counties north of the Refuge. The remaining plants are found on adjacent private land, some of which is protected under Service grassland easement. No known populations have been

recorded on Waterfowl Production Areas or on the Refuge.
The whooping crane and the gray wolf likely used the Complex historically. There are only occasional sightings of migrating or dispersing individuals today. Whooping cranes have been observed once in spring on private land in the District (1998, Sargent County, by Refuge staff).

VI. Description of proposed action:

The action is to implement the Tewaukon National Wildlife Refuge Complex Comprehensive Conservation Plan over the next 15 years. Briefly, the CCP will emphasize native prairie, other grasslands, and wetland ecosystem protection, management, and reestablishment. Management that favors native fauna and flora of the tallgrass prairie ecosystem will be selected. For detailed descriptions of proposed actions, please refer to the Management by Unit sections (pages 26-106) of the Draft CCP

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items 111. A, B, C:

1. Preservation and enhancement of tallgrass prairie and other grasslands.
No long-term detrimental effects from preserving and enhancing prairie habitats are anticipated. Currently there are no known populations of fringed orchids on Service property. Protection of grasslands will preserve existing populations by preventing loss of habitat.

The Western Prairie Fringed Orchid Recovery Plan identifies protection and appropriate management of known populations as the first priority. The CCP objectives for the District include: 1) preserving remaining native prairie tracts through a combination of voluntary partnerships, easements, and fee title acquisition; and 2) working cooperatively with landowners and providing technical assistance to develop grassland management plans and guidelines to maintain western prairie fringed orchid populations and promote healthier grasslands. Both objectives contribute to recovery of the species.

2. Restoration and maintenance of prairie wetlands.
No long-term detrimental effects from wetland restoration and maintenance are anticipated, as actions would mimic natural cycles. These activities would not affect bald eagles as they are opportunistic and other pools including Lake Tewaukon and Sprague Lakes are better suited for feeding areas.

Wetland restoration and maintenance benefit the bald eagle and whooping crane by increasing the amount of habitat available for use during migration periods. Lake Tewaukon and Sprague Lakes are managed as large, open water areas which support fish populations; both sites have been used by migration eagles.

3. Increasing biological data gathering and monitoring of habitat conditions.
Increasing biological surveys and sampling can identify important habitat areas for threatened and endangered species.

4. Providing access for public recreation on Lake Tewaukon and Sprague Lake.
Eagle use on the Refuge is generally associated with migrating flocks of waterfowl. Eagles roost in trees around lakes and are often seen on the ice. Most of this use is associated with Lake Tewaukon and Sprague Lakes, but eagles also use other Refuge sites. During primary eagle use periods (October and early November, late March and April) perimeter roads and trails around these lakes are closed. Tewaukon and Sprague Lakes are closed to boats during these primary eagle use periods. Very rarely mild weather in November during the early deer hunting season may result in hunters using the Refuge when eagles are present. A buffer zone may be utilized of nesting is initiated on the Refuge.

B. Explanation of actions to be implemented to reduce adverse effects:

None anticipated.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination	Response Requested
no effect/no adverse modification	
whooping crane	X Concurrence
gray wolf	X Concurrence
may affect, but is not likely to adversely affect species/adversely modify critical habitat	
bald eagle	X Concurrence
western prairie fringed orchid	X Concurrence
may affect, and is likely to adversely affect species/adversely modify critical habitat	
None	___ Formal Consultation

C. Candidate species:

None

8/18/00
Signature	Date
(Title/office of supervisor at
Originating station)

IX. Reviewing ESO Evaluation:

A. Concurrence X Nonconcurrence________

B. Formal consultation required________

C. Conference required________

D. Informal conference required________

E. Remarks:

8/28/00
Signature	Date
(Title/office of reviewing
Official)

BEST COPY AVAILABLE

for Allyn J. Sapa, Field Supervisor
North Dakota Field Office
Ecological Services

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Appendix N: Mailing List

Federal Officials

- Congressman Earl Pomeroy, Fargo, ND and Washington, D.C.
- Senator Kent Conrad, Fargo, ND and Washington, D.C.
- Senator Byron Dorgan, Fargo, ND and Washington, D.C.

Federal Agencies

- BIA - Aberdeen Area Office
- Bureau of Land Management
- Bureau of Reclamation
- Corps of Engineers, Bismarck ND and St. Paul MN
- EPA, Region 8 - Denver CO
- FSA - Ransom, Richland, and Sargent Counties
- NRCS - Ransom, Richland, and Sargent Counties
- Sisseton-Wahpeton Sioux Tribe, Planning Commission and Land Mgr.
- Theodore Roosevelt Nat'l Park
- USDA-Aphis - Bismarck & McLeod
- US Forest Service, Bismarck ND (Larry Dawson, Darla Lenz) and Lisbon ND
- USFWS Albuquerque, NM; Anchorage, AK; Arapaho NWR, CO; Arlington, VA; Arrowwood NWR, ND; Atlanta, GA; Bismarck, ND; Crescent Lake/N. Platte, NE; Denver, CO; Des Lacs NWR, ND; Devils Lake WMD, ND; Fort Snelling, MN; Hadley, MA; Juneau, AK; Lake Andes NWR, SD; Air Quality Branch, Lakewood, CO; Manhattan, KS; Medicine Lake NWR, MT; Portland, OR; Sacramento, CA; Sand Lake NWR, SD; Sherwood, OR; Shepherdstown, WV; Waubay NWR, SD
- USGS - BRD, Fort Collins, CO and Jamestown, ND

State Officials

- Governor Ed Schafer
- Rep. Wesley Belter
- Rep. Rick Berg
- Rep. Leroy Bernstein
- Rep. Al Carlson
- Rep. Byron Clark
- Rep. Rachael Disrud
- Rep. John Dorso
- Rep. Bruce Eckre
- Rep. Mary Ekstrom
- Rep. Bette Grande
- Rep. Howard Grumbo
- Rep. Pamela and Bill Gulleson
- Rep. Kathy Hawken
- Rep. Robert Huether
- Rep. Scott Kelsh
- Rep. Myron Koppang
- Rep. Kim Koppelman
- Rep. Chet Pollert
- Rep. Sally Sandvig
- Rep. Laurel Thoreson
- Sen. Tom Fischer
- Sen. Tony Grindberg
- Sen. Joel Heitkamp
- Sen. Judy Lee
- Sen. Deb Mathern
- Sen. Tim Mathern
- Sen. Carolyn Nelson
- Sen. Russell Thane

State Agencies

- Minneopa State Park
- MN DNR, Bemidji, Fergus Falls, and St. Paul, MN
- MN Pollution Control Ag
- ND Dept of Health
- ND Forest Service
- ND Game and Fish Dept., Bismarck, Jamestown, and Wyndmere ND
- ND State Historic Preserv. Officer
- ND State Water Commission
- NDSU Extension Service, Forman, Wahpeton, and Fargo, ND
- North Dakota Ag Department

City/County/Local Governments

- Cass County Commissioners
- Mayor Dean Ankerfelt
- Mayor Robert Billing
- Mayor Marty Bjugstad
- Mayor Chuck Campbell
- Mayor Bob Cookson
- Mayor Roger Dienert
- Mayor Steven Domm
- Mayor Marc Enderson
- Mayor Leanne Even
- Mayor Dale Fuhrman
- Mayor Bruce Furness
- Mayor Robert Furt
- Mayor Marilyn Gunderson
- Mayor Brad Hejtmanek
- Mayor Dennis Klosterman
- Mayor Loren Larsen
- Mayor Ed Morrow
- Mayor Ronald Narum
- Mayor Grover Riebe
- Mayor John Richards
- Mayor Morris Saxerud
- Mayor Bud Schmitz
- Mayor Carl Taubert
- Ransom Co Commissioners; Sheriff's Office; Water Resource District; Weed Board
- Richland Co Commissioners; Historical Society; Sheriff's Office; Water Resource District; Weed Board
- Sargent Co Commissioners; Sheriff's Office; Water Resource District; Weed Board
- Twnshp Clerk Elwood Anderson
- Twnshp Clerk Luann Anderson
- Twnshp Clerk Perry Anderson
- Twnshp Clerk Marcia Asche
- Twnshp Clerk Duane Baldwin
- Twnshp Clerk Ray Bartholomay
- Twnshp Clerk Mark Bartle
- Twnshp Clerk Leroy Berg, Jr
- Twnshp Clerk Richard Birklid
- Twnshp Clerk Ralph Bladow
- Twnshp Clerk Jim Bosse
- Twnshp Clerk Emily Braaten
- Twnshp Clerk Leslie Brandvold
- Twnshp Clerk Renae Branson
- Twnshp Clerk Janice Breker
- Twnshp Clerk Beverly Brezicka
- Twnshp Clerk Marie Brown
- Twnshp Clerk Noreen Bulthers
- Twnshp Clerk Glora Claeys
- Twnshp Clerk Sheila Coleman
- Twnshp Clerk Lynnae Decker
- Twnshp Clerk Russell Falk
- Twnshp Clerk Kim Frovnke
- Twnshp Clerk Jodi Fugl
- Twnshp Clerk Mark Gauslow
- Twnshp Clerk Tom Geffre
- Twnshp Clerk Audrey Gilles

- Twnshp Clerk Sonja and Grant Gullekson
- Twnshp Clerk Wanda Haase
- Twnshp Clerk Evelyn Hagen
- Twnshp Clerk Harry Hakanson
- Twnshp Clerk Lynn Hansen
- Twnshp Clerk Sandra Hanson
- Twnshp Clerk Don Heitkamp
- Twnshp Clerk Susan Heitkamp
- Twnshp Clerk Vernon Heitkamp
- Twnshp Clerk Ken Heley
- Twnshp Clerk Norma Jensen
- Twnshp Clerk Dale Johnson
- Twnshp Clerk Kenneth Johnson
- Twnshp Clerk Thomas Karzynski
- Twnshp Clerk Myron Keller
- Twnshp Clerk Doran Kersting
- Twnshp Clerk Rick Kulb
- Twnshp Clerk David Larson
- Twnshp Clerk Deb Larson
- Twnshp Clerk John Larson
- Twnshp Clerk Ted Lee
- Twnshp Clerk Hermann Lentz
- Twnshp Clerk Ronald Lessen
- Twnshp Clerk James Lingen
- Twnshp Clerk Marlene Luick
- Twnshp Clerk Russell Martinson
- Twnshp Clerk Robert McDaniel
- Twnshp Clerk Wayne Meslow
- Twnshp Clerk Mike Moellenkamp
- Twnshp Clerk James Moffet
- Twnshp Clerk Bonita Nelson
- Twnshp Clerk Randy Pearson
- Twnshp Clerk Bruce Peterson
- Twnshp Clerk Jeff Peterson
- Twnshp Clerk Leslie Rieger
- Twnshp Clerk Joan Schlecht
- Twnshp Clerk Michael Schott
- Twnshp Clerk Steven Smith
- Twnshp Clerk Joann Solberg
- Twnshp Clerk Bruce Stein
- Twnshp Clerk Janice Swanson
- Twnshp Clerk Denise Tangen
- Twnshp Clerk Sandy Tiede
- Twnshp Clerk Donald Vosburg
- Twnshp Clerk Josephine Voss
- Twnshp Clerk Beverly Walstead
- Twnshp Clerk Connie White
- Twnshp Clerk Korrine Winstead
- Twnshp Clerk Leslie Witt
- Twnshp Clerk Anita Woodbury
- Western Governors Association
- Wild Rice SCD

Organizations

- 4 Corners Wildlife Club
- Agassiz Env. Ed Committee
- Alice Wildlife Inc
- American Birding Association
- Animal Protection Institute
- Barnes Co. Wildlife Federation
- Bluestem Co.
- Board Grazing Committee
- CARE - Washington, D.C.
- Cass County Wildlife Club
- Cogswell Gun Club
- Conservation Fund
- Crookston Gun Club
- Cure
- Dakota Resource Council
- Dakota Wildlife Trust
- Defenders of Wildlife, Noah Matson and Tom Unisch
- Delta Waterfowl
- Dickey Co Wildlife Federation
- Ducks Unlimited, Bismarck and Scott McLeod
- Earth Island Institute
- Environmental Defense Fund
- Fargo Area Sportsmen
- Farm Bureau - Fargo and Forman, ND
- Friends of Animals
- Ft. Ransom Sportsmen Club
- General Federation of Women's Cultura Club
- Grand Forks County Wildlife Federation
- In Defense of Animals
- International Coalition
- Izaak Walton League, New London and St. Paul, MN
- Kastz, Inc
- Keep ND Clean, Inc
- Kindred Wildlife Club
- KRA CORP/F&W Reference Service
- L.A.N.D.
- Lac Qui Parle Prairie Preserve
- Lake Region Wildlife Club
- Lewis and Clark Wildlife Club
- Lidgerwood Sportsmen Club
- Minn-kota Sportsmen Club
- MN Bow Hunters, Inc
- MN Conservation Federation
- MN Deer Hunters Assoc, Duluth, Fergus Falls and Mankato, MN
- MN State Archery Association
- MN Waterfowl Assoc, Minneapolis and Willmar
- MN Wildlife Federation
- North American Prairies Co.
- National Audubon Society, Fargo, ND, Minneapolis, MN and Washington, D.C.
- National Wildlife Refuge Assoc., Burnsville, MN and Colorado Springs, CO
- Native American Fish and Wildlife Society
- Nature Conservancy, Glyndon, MN, Minneapolis, MN, Helena, MT, Arlington, VA
- ND Birding Association
- ND Chapter of The Wildlife Society
- ND Natural Science Society
- ND Soil and Water Conserv. Society
- ND Stockmen's Association
- ND Water Education Foundation
- ND Wetlands Trust
- ND Wildlife Federation
- Nelson Co Envirn. Service
- Pheasants Forever, Lisbon, Milnor, and West Fargo, ND, St. Paul, MN
- Phillips Petroleum Company
- Prairie Restorations
- Prairie Visions
- Prairie Woods Elc
- Red River Area Sportsmen
- Red River Valley Potato
- Richland Wildlife Club, Paul Berg, Coletta German
- Rutland Sportsmen Club
- Safari Club International
- Sierra Club, Fargo, ND and Minneapolis, MN
- Sisters St Francis
- Tewaukon Rod and Gun Club
- The Fund for Animals
- The Prairie is My Garden
- Trumpeter Swan Society
- Trust For Public Land
- TWS - Cent. Mts. And Plains
- Wilderness Society
- Wildlife Forever
- Wildlife Management Institute
- Wildlife of America

Newspapers, Radio, TV

- Bird Dog News
- Daily News
- Detroit Lakes Tribune
- Enderlin Independent
- Fargo Forum
- Fergus Falls Daily Journal
- Fertile Journal
- Flickertails
- Gun Dog News
- Hawley Herald
- KBMW Radio
- KCCM MN Public Radio
- KDDR Radio
- KDSU Radio
- KFGO Radio
- KFNW Radio
- KOVC Radio
- KQDJ Radio
- KQLX Radio
- KSJB Radio
- KTHI-TV
- KXJB-TV
- Lake Park Journal
- MN Ornithologist's Newsletter
- Morris Sun and Tribune
- Northland Outdoors
- Oakes Times
- Outdoor News
- Ransom County Gazette
- Richland County News
- St Paul Pioneer Press
- Star Tribune
- The Teller
- Tony Dean Outdoors
- WDAY Radio
- WDAY-TV

Schools/ Universities

- Central Elementary
- Enderlin Public School
- Fairmount Public School
- Hankinson Public School
- Kindred Public School
- Lidgerwood Public School
- Lisbon Public School
- Milnor Public School
- Minot State University
- North Sargent Public School
- North Dakota State University
- Northwestern University
- Sargent Central School
- Sheldon Public School
- South Dakota State University
- Southwest State University
- St John's School
- University of Minnesota
- University of North Dakota
- Wahpeton High School
- Wahpeton Middle School
- West Fargo High School
- Wyndmere Public School
- Zimmerman Grade School

Libraries

- Fargo Public Library
- Forman Public Library
- Hankinson Public Library
- Lidgerwood Public Library
- Lisbon Public Library
- ND State College of Science Library
- NDSU Library
- Oakes Public Library

Individuals

Karolyn Ahrens
Larry and Barb Albertson
Virgil Alfson
Duane Aman
Bill Amerman
Bill Anderson
Charles Anderson
Gary Anderson
Edwin Anderson
Harris Anderson, Cogswell
Harris Anderson, Havana
Helen Anderson
Larry Anderson
Lyle Anderson
Richard Anderson
Arndt Brothers Partnership
Harlow and Jeanette Arneson
Harold Asche
Robert Asche
Douglas Askerooth
Elvoy and Grace Askerooth
Mark Askerooth
Bruce Atterberg
Jim Azure
Dennis Babcock
Ed Backer
Vernon Bakken
Arnold Banish
James Banish
Tom Banish
Dana and Sandy Banish
Jack Barber
Larry Bartholomay
Roland Barvels
Bob Beeson
Rus Bellin
Ronald Bellin
Bill Berg
Jerry Berg
Roman Berg
Brian Bergh
Duane Bergh
Jon Bergh
Paul Bergh
Ronald Bergh
Todd and Monica Bergh
Ross Bergland
Eugene Bergman
Harvey Bergstrom
Wayne Beyer
Richard Biewer
Leonard Birnbaum
John Birnbaum
George Bishoff
Dale Bladow
David Bladow
Lowell Bladow
Lyle Bladow
Kevin Bleecker
Karen Blilie
Alfred Boehning
Duane Booder
James Bommersbach
Robert Boughton
Larry Brash
Clarence Breker
David Breker
Delores Breker
Esmeralda Breker
Jeff and Jodi Breker
Jim and Mary Breker
Joe and Patty Breker
Kurt Breker
Mark and Debbie Breker
MJ Breker
Shane Breker
Ray Brickzen
Lawrence Brown
John Brummond
Larry Brunkhorst
Elmer Buckhaus
Donald Buckhaus
Lyle Buckhouse
Karin Bueling
Lance Bueling
Bob Bulik
Anna Busta
Stephen Campbell
Terry Carlen
Arthur Carlson
Kurt Carlson
Kent Carpenter
Karlton Chapin
Fred Christensen
Guy and Marilyn Christiansen
Jerry Christianson
Brendan Ciesynski
Lysle Coleman
Jeff Colemer
Mike Cooper
Raymond Cossette
Butch Craig
Arnam Crandall
DarWayne Crandall
DeVaar Crandall
Kevin Crandall
Lawrence and Neola Cross
Royce Dahl
Don Dathe
Marvin David
Loren and Dawn David
John Davis
Harvey Dawson
Jeff Dick
James Diekman
Greg Donaldson
Wayne Doty
Jim Duerr
Steven Dunn
Lee Dusek
Terry Dusek
Michael Dwyer
Steve Ehli
Randy Ehni
David Eklund
Todd and Jackie Ekstrom
Loren Ellefson
Steve Ellefson
Dwain Ellenberger
John Emme
Kenneth Emmel
Richard Engst
Greg Ennis
Edwin Erickson
Larry Erickson
Lyle Erickson
Raymond Erickson
Roger Erickson
Patricia Farrar
Charles Foster
Patrick Freeberg
Phillip Freeman
Allan Fugl
William Fugl
Earl and Susan Fust
Robert Fust
R.E. Gabel
Walter Gardner Jr.
Andy Gaukler
Clint Gaukler
Jim and Down Gaukler
Jim and Kathryn Gaukler
Louie Gaukler
Richard Gerriets
Roger Gibbon
Audrey Gilles
Tawny Gilles
LeRoy Gisi
Hilda Giske
Randy Gjestuang
Doug and Nancy Glarum
Charles Goltz
Dennis Goltz
Janet Green
Randall and Collin Greenley
Todd Greenmeyer
Joe Gregor
Howard Grumbo
Gary Gulsvig
Murdean Gulsvig
Rex Guthrie
Jerry Haahr
Dan and Matthew Handt
Allan Hankel
Hanson Farms JV
Mark Hardina
Dan Hare
Steve Haring
Ted Harles
Brittany Hasbargen
Julie Hassebroek
Charles Haus
Barbara Hayen
John Heley
Warren Henderson
Dale Henry
Robert Herding
Arthur Herman
Herman Brothers
Alver Hermsen
Dave Hestdaler
Betty Hewitt
Leonard Heyen
Geddy Hicks
Wayne Hinrichs
Maynard Hitchcock
Weldon Hoesel
Andy Hoflen
Darren Hoistad
Rick Hoistad
Quentin and Doris Hoistad
Ray Holcomb
Ruth Holm
Alexis Holtz
Roger Hom
Russel Hosford
Lynn Hoverman
Charles Hrdlicka
Jim and Darlene Huckell
LuVern Illies
Blake Ista
Calvin Jacobson
Dan Jacobson

Mark Jensen
Bob Johnson
Dewey Johnson
Charles Jorgenson
Steve Jorgenson
Loy Justesen
Paul Kadoun
Joe and Jaci Kaler
Dean Kaseman
Dale Keller
Jerome Kelsh
Terry Kempel
Don Kiefer
George Kiefer
Joe Kiefer
Paul Kiefer
Pete Kiefer
Thomas Kiefer
Elroy Kiefert
Harvey Kleingarn
David Kleven
David Kluge
Kevin and Barb Kohoutek
Ray Kotchin
Ken and Kermit Koube
Rich Kostecke
Dareld Koriol
Roger Kratcha
Dennis Krause
John Krentz
Duane Krivarchka
Elaine Kroeger
Arlene Krump
Arnold Kruse
Bob Kuchera
Mike Kulzer
Norbert Kulzer
James Kutter
Neal Kutter
Greg Lague
Greg Laine
Dean Langenwalter
David Lauer
Allen and Jennifer Lawrence
Catherine Lawrence
Harold Lawrence
Earl Lehmann
Howard Lere
James Levery
Annette Lewis
Paula Lewis
Ellery Liebelt
Randy Lien
Michael Lindsey
Thomas Lindsey
Duane Lock
Mike and Penny Lock
Loff Farms
Jim Lyon
Lester Lyons
Richard and Delores Lyane
Mitch Mahrer
Rick Mairs
Arden Malheim
Joe Malheim
Pam Maloney
Joe Malstrom
John Manikowski
Stan Manikowski
William Manikowski
Kevin Manock
Melvin Manock
Kenneth Marohl
Donald Marquette
Jim Marquette
Jim and Mavis Marquette
Kyle Marquette
Ed Marrow
LeRoy Martin
Rodney Mathais
Wayne Mattson
Ronald McBeth
Alvin McLaen
Clayton McLaen
Dennis and Lori McLaen
Milton McLaen
Steve and Janell McLaen
Tammy Metzen
Tom Meyer
Keith Mikesh
Bruce and Denise Milbrandt
Eugene Miller
Bill Mitchell
John Mlnarik
Larry Moxness
Curt Mund
Alan and Pam Murack
Don Murack
Nick Nankivel
Alfred and Sheila Neiber
Gerald Neiber
Joe and Elizabeth Neiber
Joseph and Judy Neiber
Gary Nelson
Hal Nelson
Jerry Nelson
Orville Nelson
Ray Nelson
Richard and Janet Nelson
Roger Nelson
Trent and Eva Nelson
Wyatt Nelson
Nickeson Farms
George Novotny
Chris Nundahl
Dean Nundahl
LeRoy Odenbrett
Curt Ohm
David Ohm
David Olson
Harold Olson
Neil Olson
Alan Olstad
Danny O'Meara
Joe O'Meara
Brian Orn
Robert Orn
Mike Paczkowski
Matt Parrow
David Paulson
Douglas Payne
Daniel Pearson
Gordon Pearson
Marvin Pearson
Roger Pearson
Alberta Pederson
Jeffery Pederson
Harvey Peterson
Richard Peterson
Peterson Brothers
Tom Pettersen
Dennis Pherson
Dennis and Ione Pherson
Lenny Pherson
Richard Pickell
Debbie Podliska
Bernard Polansky
John Popp
Randy Ptacek
Dennis Quam
Adam Quintanilla
Ronald Raatz
Kim Rasmussen
John Remson
Gerald Riba
John Richards
Gerald Ringdahl
Wesley Robertsdahl
Thomas Robey
Wayne Robey
Doyle and Linda Roeder
Roland Roeder
Gene Rossow
John Rotenberger
Al Rusch
Sean Russell
Lynn Sabbe
Lee Sagvold
Paul Sandman
Keith Saunders
Jack Saunders
Mark and Mary Saunders
Charles Schiele
Gary Schiltz
Roger Schiltz
Allan Schram
Lois Schuler
Robert Schuler
Steve Schumacher
Allyn Schwab
Mark Schwan
Mitchell Sebens
Joseph Siekaniec
LeRoy Siemieniewski
Louis Siemieniewski
Peter Siemieniewski
Ray Siemieniewski
Tom Siemieniewski
Curtis Silseth
Orvis Silseth
Ronald Sitts
Mike Skroch
Bill Smith
Lowell Smith
Jim Smykowski
Ken Smykowski
James Sorby
Al Soukup
Don Stallman
Jeff Steffens
Todd and Diane Stein
Mark Stenson
Kari Sterna
Mark Stortroen
Harris Strege
Steve Strege
Farren Stroehl
Ken Stroh
Lawrence Strouse
Earl Sulerud
Colin Sundquist
Robert Sundquist
David Susag
Dan Svingen
John Szatkowski
Jens Tennefos
Nevin Tergensen
Aaron Teschner
Ron Teschner
Stanley Theisen
Kristie Thobe
Harlo Thol
Gene Thompson
Gary Thornberg
Doug Thorstad
David Tiegs
Debbie Tiegs
Paul Tiegs
David Titus
Dale Torreson
Einar Tosse
John Totenhagen
Herb Troester
Russ Turchin
Trevor Vanberkom
Gene Van Eeckhout
Brian Veulek
Roy Vig
Chad Wagner
Larry Walden
G. Douglas Walker
Tom Walock
Gary Walstead
Mike Walstead
Roger Walstead
Robert Washnieski
Joe Wateland
Allen Weber
Earl Weber
Mark and Vickie Weber
Donald Wehlander
Kenny Weiderholt
Curt Wells
Joe and Betty Wettstein
Dennis Wheeler
Roger and Connie White
Terry Wieser
Arlen Willprecht
Bud Wisnewski
Jerome Wisnewski
Alan Wittich
Allen Wittich
Clayton Wohlwend
Louis Wohlwend
Larry Woodbury
Bill Woytassek
John Woytassek
Jerry and Patty Woytassek
Virgil and Ivadelle Woytassek
Brad and Tracy Wyum
Mark and Kathy Wyum
Mike and Phyllis Wyum
Robert Wyum
Steve Wyum
Thomas Wyum
Paul Zavada
Dave Zentner
Dave Zetocha
Garth Zimbelman
Terry Zimbelman
Don Zirnhelt
Mike Zirnhelt

Appendix O: Glossary

Academia: pertaining to colleges or universities.

Accessible: areas and activities allowing the physical access of areas to people of different abilities especially those with physical impairments.

Adaptive Resource Management (ARM): refers to a process in which decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in the management plan. Analysis of results help managers determine whether current management should continue as is or whether is should be modified to achieve desired conditions.

Advocacy: the act or process of supporting a cause or proposal; to actively support.

Amphibians: a class of cold-blooded vertebrates including frogs, toads or salamanders.

Anadromous: fish which swim up rivers from the sea at certain seasons for breeding (i.e., salmon).

Avian Cholera: is a contagious disease resulting from infection by the bacterium *Pasteurella multocida* that affects migratory birds. High concentration of the bacteria con be found for several weeks in waters where birds die from the disease. The bacteria can be transmitted through ingestion by birds and other animals scavenging off of diseased carcasses, direct contact between birds, and by air borne particulate. (Field Manual of Wildlife Diseases, 1999-001).

Baseline: a set of critical observations or data used for comparison or a control.

Big Game: large animals sought for hunting or fishing for sport including species such as white-tailed deer, antelope, mule deer, and elk.

Biological Control: reduction in numbers or elimination of unwanted species by the introduction of natural predators, parasites or diseases.

Biomass: the total amount of living material, plants and/or animals, above and below the ground in a particular habitat or area.

Biotic: pertaining to life or living organisms; caused or produced by or comprising living organisms.

Botulism: (Avian botulism) is a often fatal disease of birds that results when they ingest toxin produced by the bacterium, *Clostridium botulinum*. The bacteria persists in spores in wetland soil and are resistant to heating and drying and can remain viable for many years. Botulism outbreaks occur during the summer and fall when air temperatures are high and decaying vegetation is present. These conditions enable the spores to germinate. The cycle for botulism starts with birds dying, maggots begin feeding on carcass, maggots with the toxic bacteria are eaten by other birds, those birds die and the cycle continues. (Field Manual of Wildlife Diseases, 1999-001).

Breeding Bird Survey (BBS): a cooperative program of the U.S. Fish and Wildlife Service and the Canadian Wildlife Service for monitoring population changes in North American breeding birds by using point counts along roads (Koford et al. 1994).

Bureau of Reclamation: a Federal government water management agency whose mission is to assist in meeting the increasing water demands of the west while protecting the environment and the public's investment in these structures. Responsible in the District for carrying out the Garrison Diversion Unit Reformulation Act of 1986 and implementing the wetland wildlife mitigation in the Kraft Slough area.

Calcareous: refers to soils with moderate to large amounts of calcium, usually calcium carbonate.

Categorical Exclusion (CE, CX, CATEX, CATX): a category of actions that do not individually or cumulatively have a significant effect of the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4)

Central Migratory Bird Flyway: migrating birds follow specific pathways in their travel from their wintering grounds to their nesting grounds. Several major pathways are evidenced by their travels. The Central flyway occurs along the great plains states.

Climax: a community that has reached a steady state under a particular set of environmental conditions; a relatively stable plant community; the final stage in ecological succession.

Colony: the nests or breeding place of a group of birds (such as herons) occupying a limited area.

Compatibility: a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgement of the Refuge Manager, will not materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge (Draft Service Manual 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations of limits necessary to ensure compatibility.

Comprehensive Conservation Plan (CCP): A document that describes the desired future conditions of the refuge; and provides long-range (15-year) guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the System, and to meet other relevant mandates (Draft Service Manual 602 FW 1.5)

Cool Season Grasses: begin growth earlier in the season and often become dormant in the summer. These grasses will germinate at lower temperatures (65 to 75° F). Examples of cool season grasses at Refuge are green needlegrass, porcupine grass, intermediate wheatgrass and tall wheatgrass, smooth brome, quackgrass, and Kentucky bluegrass.

Cultural Resources: the remains of sites, structures, or objects used by people in the past.

Cultural Resource Inventory: A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined area. Inventories may involve various levels, including background literature search (Class I), sample inventory of project site distribution and density over a larger area (Class II), or comprehensive field examination to identify all exposed physical manifestation of cultural resources (Class III).

Dakota Tallgrass Prairie Project: a project within the eastern portion of North and South Dakota that includes parts of 32 counties (North Dakota: Dickey, Ransom, Richland, Sargent; South Dakota: Beadle, Bon Homme, Brookings, Brown, Clark, Clay, Codington, Davison, Day, Deuel, Grant, Hamlin, Hanson, Hutchinson, Kingsbury, Lake, Lincoln, Marshall, McCook, Miner, Minnehaha, Moody, Roberts, Sanborn, Spink, Turner, Union, Yankton). The U.S. Fish and Wildlife Service is working to protect, enhance, and restore uplands. A project proposal to the Land and Water Conservation Fund.

Data Loggers: equipment that when installed in water impoundments will be able to read the water level remotely at anytime of the year and save the data for managers to assist in carrying out the goals of the water management plan.

Defoliation: the removing of vegetative parts, to strip of leaves from animals and fire.

Dense nesting cover (DNC): a composition of grasses and forbs that allow for a dense stand of vegetation which protects nesting birds from the view of predators. Usually consists of one to two species of wheatgrass, alfalfa, and sweet clover.

Depredation: Damage inflicted upon agricultural crops or ornamental plants by wildlife.

Drawdown: the act of manipulating water levels in an impoundment to allow for the natural drying out cycle of a wetland.

Drift Prairie: an area of small, gently rolling hills, dotted with thousands of small wetlands with densities of up to 100 wetlands per square mile. It was formed by the melting and retreat of the Wisconsin glacier about 10,000 years ago.

Drift Prairie Wetland Enhancement Project: a project within the Prairie Pothole Joint Venture that includes 14 Counties in southeastern North Dakota (Barnes, Cass, Eddy, Griggs, Ransom, Richland, Sargent, Steele, Trail, and portions of Dickey, Foster, LaMoure, Stutsman, and Wells counties). Various governmental and nongovernmental agencies are working together to protect, enhance, and restore wetlands and uplands. Funded by the North American Wetlands Conservation Act.

Easement Refuges: areas where easements for flowage and refuge purposes and filing of water rights were purchased. A perpetual agreement with the landowner and any successive landowners that provided the exclusive and perpetual right and easement to flood with water, and to maintain and operate an artificial lake, and/or to raise the water level of a natural lake or stream, by means of dams, dikes, fills ditches, spillways and other structures for water conservation, drought relief, and for migratory bird and wildlife conservation purposes, and/or upon said land and waters to operate and maintain a wildlife conservation demonstration unit and a closed refuge and reservation for migratory birds and other wildlife.

Ecological Diversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1.12B).

Ecosystem: a dynamic and interrelating complex of plant and animal communities and their associated non-living environment; the totality of components of all kinds that make up a particular environment (Koford et al. 1994).

Emergent: a plant rooted in shallow water and having most of the vegetative growth above water. Examples are cattail and hardstem bulrush.

Endangered Species (Federal): A plant of animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Endangered Species (State): A plant or animal species in danger of becoming extinct of extirpated in North Dakota within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

Environmental Assessment (EA): a concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternative to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

Extinction: the complete disappearance of a species from the earth; no longer existing. (Koford et al. 1994).

Extirpated: the elimination of a species from an island, local area or region (Koford et al. 1994); to destroy completely; wipe out.

Fauna: all the vertebrate and invertebrate animals of an area; the animals characteristic of a region, period or special environment.

Fen: A fen, also called an alkaline bog, is a wetland primarily composed of organic soil material (peat or muck) that take thousands of years to develop.

Feral: having escaped from domestication and become wild.

Finding of No Significant Impact (FONSI): A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal Action will have no significant effects on the human environment and for which an Environmental Impact Statement will not be prepared (40 CFR 1508.13).

Flora: all the plant species of an area; plant or bacterial life characteristic of a region, period or special environment.

Floristic: referring to studies of the species composition of plant associations (Koford, et al. 1994); of or relating to flowers.

Forb: a broad-leaved, herbaceous plant; a seed producing annual, biennial or perennial plant that does not develop persistent woody tissue but dies down at the end of a growing season.

Fulfilling the Promises: a document that has the visions and recommendations on leadership in serving wildlife, habitat and people to fulfill the promise of America's National Wildlife Refuge System first made by President Theodore Roosevelt in 1903 to preserve wildlife and habitat for its own sake and the benefit of the American People (Fulfilling the Promise: The National Wildlife Refuge System, July 1999).

Geographic Information System (GIS): a computer system capable of storing and manipulating spatial data; a set of computer hardware and software for analyzing and displaying spatially referenced features (i.e., points, lines and polygons) with nongeographic attributes such as species and age (Koford et al. 1994).

Goal: descriptive, open-ended and often broad statements of desired future conditions that convey a purpose but do not define measurable units (Draft Service Manual 620 FW 1.5).

Global Positioning System (GPS): a system which by using satellite telemetry can pinpoint exact locations of places on the ground.

Grassland Easements: a legal perpetual agreement between willing landowners and the Service to permanently keep land in grass for wildlife. Land covered by a grassland easement may not be cultivated. Mowing, haying and grass seed harvesting must be delayed until after July 15 of each year. Grazing is not restricted.

Habitat: the place or environment where a plant or animal naturally or normally lives and grows.

Habitat fragmentation: the alteration of a large habitat to create isolated patches of the original habitat that are interspersed with a variety of other habitat types (Koford, et al. 1994); the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

Habitat and Population Evaluation Team (HAPET): a team of Service scientists who with GIS and research data devised the Thunderstorm Map which indicates the areas preferred by mating and nesting ducks in the Prairie Pothole Region. This map is used to focus management efforts, restoration efforts and protection efforts in the area.

Herbivory: an animal feeding on plants

Holistically: ecology views humans and the environment as a single system; relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts.

Impoundment: A body of water created by collection and confinement within a series of levees or dikes thus creating separate management units although not always independent of one another.

Incompatible: any use (recreational or nonrecreational) of a refuge that, in the sound professional judgement of the Director of the Service, will materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge. Incompatible uses are not allowed to occur on Service areas.

Indicator species: A species of plant or animal that is assumed to be sensitive to habitat changes and represents the needs of a larger group of species.

Integrated Pest Management (IPM): The control of pest species (plant or animal) using a practical, economical, and scientifically based combination of biological, mechanical, cultural, or chemical control methods. A balanced approach to controlling pest species populations.

Interseeding:: a technique of planting in which seed is sowed directly into an existing turf. It protects the valuable soil resource and also promotes less competition from weed species that would invade in a plow seeding operation.

Introduced species: a species present in an area due to deliberate release by humans (including re-introductions, transplants, and restocked species) or due to accidental release through escape or indirect assistance (Koford et al. 1994).

Inviolate Sanctuary: A place of refuge or protection where animals and birds may not be hunted.

Lacustrine: relating to, formed in, living in, or growing in lakes.

Lek: an assembly area where animals (such as the sharp-tailed grouse) carry on breeding and courtship behavior.

Mayfield method: a method used to calculate the rate of nesting success based on the number of days that a nest was under observation (i.e., nest days of "exposure"); developed by Mayfield in 1975 (Koford et al. 1994).

Maintenance Management System (MMS): a national database which contains the unfunded maintenance needs of each refuge. Projects included are those required to maintain existing equipment, buildings and to correct safety deficiencies for the implementation of approved plans, and meet goals, objectives, and legal mandates.

Mechanical Control: reduction in numbers or elimination of unwanted species through the use of mechanical equipment such as mowers, clippers etc.

Mesic: characterized by, relating to or requiring a moderate amount of moisture; having a moderate rainfall.

Migration: regular, extensive, seasonal movements of birds between their breeding regions and their "wintering" regions (Koford et al. 1994); to pass usually periodically from one region or climate to another for feeding or breeding.

Migratory birds: birds which follow a seasonal movement from their breeding grounds to their "wintering" grounds. Waterfowl, shorebirds, raptors, and song birds are all migratory birds.

Migratory Bird Hunting and Conservation Stamp Act: Authorized the requirement of an annual stamp for the hunting of waterfowl whose proceeds go towards the purchase of habitat for waterfowl and other wildlife. Duck stamps are also purchased for entry into some refuges, by conservationist and for stamp collections.

Migratory Bird Treaty Act: Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or nonfederal, to the hunting of migratory birds.

Mississippi Migratory Bird Flyway: migrating birds follow specific pathways in their travel from their wintering grounds to their nesting grounds. The Mississippi flyway where birds follow the general path of the Mississippi River.

Mitigation: measures designed to counteract environmental impacts or to make impacts less severe.

Mixed-grass Prairie: a transition zone between the tallgrass prairie and the shortgrass prairie dominated by grasses of medium height that are approximately two to four feet tall. Soils are not as rich as the tallgrass prairie and moisture levels are less. This causes changes in the vegetative composition and plants characteristic of this area include little bluestem, Junegrass and needle grasses.

Monitoring: the process of collection information to track changes of selected parameters over time.

National Environmental Policy Act of 1969 (NEPA): Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (from 40 CFR 1500).

National Wildlife Refuge (NWR): a designated area of land, water, or an interest in land or water within the National Wildlife Refuge System.

National Wildlife Refuge System (System): Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction, all lands, waters and interests therein administered by the Secretary as wildlife refuges, areas for the protections and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997: Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native Species: species which are part of the original plant and animals of an area. In general, meaning from the same continent (Johnson and Larson, 1999).

Necrotic Enteritis: Necrotic enteritis has occurred on highly alkaline lakes and wetlands where sodium, magnesium, and sulfate levels have been relatively high. The bacteria that causes necrotic enteritis is normally found in nonlethal amounts in intestines of healthy animals. It is believed that abrupt dietary changes, stress, infections from other diseases, and bacterial imbalances could be the reason this bacteria is suddenly produced at higher rate causing death. In southern Canada, geese can die soon after their arrival following their diet change from grass in northern regions to grain. These birds are also using alkaline bodies of water which seems to upset the normal bacterial balance.

Neotropical Migrant: a bird species that breeds north of the United States and Mexican border and winters primarily south of this border.

Nest Success: The percentage of nests that hatch (one or more eggs hatch) successfully of the total number of nests initiated in an area.

ND Natural Heritage Program: A State program administered by the ND Parks and Recreation Department. The Natural Heritage Program will protect and preserve elements of North Dakota's natural heritage on private and public lands, for the benefit of present and future generations before such areas are destroyed.

North American Waterfowl Management Plan (NAWMP): the North American Waterfowl Management Plan, signed in 1986, recognizes that the recovery and perpetuation of waterfowl populations depends on restoring wetlands and associated ecosystems throughout the United States and Canada. It established cooperative international efforts and Joint Ventures composed of individuals; corporations; conservation organizations; and local State, provincial, and Federal agencies drawn together by common conservation objectives. Tewaukon Complex falls into the Prairie Pothole Joint Venture.

North American Wetland Conservation Act (NAWCA): an act to conserve North American wetland ecosystems and waterfowl and the other migratory birds and fish and wildlife that depend upon such habitats. The act established a council to review project proposals and provided funding for the projects. This act was passed to further implement the North American Waterfowl Management Plan and included Canada, Mexico, and the United States.

Objective: An objective is a concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. (Draft Service Manual 602 FW 1.5).

Parasitism: an intimate association between species of two or more kinds, one in which a parasite obtains benefits from a host which it usually injures.

Partners in Flight: a Western Hemisphere program designed to conserve neotropical migratory birds and officially endorsed by numerous Federal and State agencies and nongovernment organizations; also known as the Neotropical Migratory Bird Conservation Program (Koford et al. 1994).

Patch: a part or area distinct from that around it; area distinguished from their surroundings by environmental conditions.

Perennial: plants which live for three years or more (Johnson and Larson 1999).

Prairie Pothole Region: an area rich in natural depressions that capture precious water in a relatively dry prairie landscape which provides the most productive breeding habitat in North America for waterfowl and many other birds. Covers portions of Iowa, Minnesota, Montana, North Dakota, South Dakota, Alberta, Saskatchewan, and Manitoba.

Predation: a mode of life in which food is primarily obtained by the killing or consuming of animals.

Preferred Alternative: this is the alternative determined to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.

Prescribed Burning: Controlled application of fire to the landscape that allows the fire to be confined to a predetermined area while producing the intensity of heat and rate of spread required to achieve planned management objectives.

Priority Public Uses: six uses authorized by the Refuge Improvement Act to have priority and are found to be compatible with the refuge purposes. This includes hunting, fishing, wildlife observation and photography, environmental education, and interpretation

Raptor: a carnivorous bird (as a hawk, falcon, or vulture) that feeds wholly or chiefly on meat taken by hunting or on carrion (dead carcasses).

Refuge Operating Needs System (RONS): a national database which contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans, and meet goals, objectives, and legal mandates.

Resident species: a species inhabiting a given locality throughout the year, nonmigratory species. Examples include white-tailed deer, sharp-tailed grouse, muskrat, raccoon, mink, and fox.

Riffle: a shallow, extending across the bed of a river; also a rapid; to form, flow over, or move in riffles.

Riparian: refers to areas adjacent to water; influenced by water associated with streams or rivers.

Rough Fish: a fish that is neither a sport fish nor an important food for sport fishes (i.e., carp).

Scoping: the process of obtaining information from the public for input into the planning process.

Sediments: material deposited by water, wind, or glaciers.

Shelterbelts: single to multiple rows of trees and/or shrubs planted around cropland or buildings to block or slow down the wind.

Shorebird: any of a suborder (Charadrii) of birds (as a plover or snipe) that frequent the seashore or mud flat areas.

Spatial: relating to, occupying, or having the character of space.

Special Use Permit: a permit for special authorization from the refuge manager required for any refuge service, facility, privilege, or product of the soil provided at refuge expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations (Refuge Manual 5 RM 17.6)

Species of Concern (Federal): species which are (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats.

Species Richness: the absolute number of species in an assemblage or community; the number of species in a given area (Koford et al. 1994).

Stakeholder: a person who has an interest in activities of the Complex.

Strategy: a specific action, tool or technique or combination of actions, tools and techniques used to meet unit objectives (Draft Service Manual 602 FW 1.5).

Tallgrass Prairie: a habitat zone dominated by grasses of tall height that are approximately four to eight feet tall. Soils are rich and precipitation is the more than in any other prairie area. The vegetative composition and plants characteristic of this area include big bluestem, Indian grass, prairie cordgrass, switchgrass, and needle grasses.

Tewaukon National Wildlife Refuge Complex (Complex): a management unit of the Service that is located in the Southeast corner of North Dakota (see Map 1). The Complex encompasses the Refuge including the Sprague Lake Unit, the Storm Lake Easement Refuge, the Wild Rice Easement Refuge and the Tewaukon Wetland Management District (WMD).

Threatened Species (Federal): Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Threatened Species (State): a plant or animal species likely to become endangered in North Dakota within the near future if factors contributing to population decline or habitat degradation or loss continue.

Thunderstorm Map: a map which depicts areas (wetland complexes) that are preferred by mating and nesting ducks in the Prairie Pothole Region. This map is used to focus management efforts, restoration efforts, and protection efforts in the area.

Till: unstratified glacial drift consisting of clay, sand, gravel, and boulders intermingled.

Turbidity: the cloudy condition of a water body caused by suspended silt, mud, pollutants, or algae.

U.S. Fish and Wildlife Service (Service, FWS): the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 500 national wildlife refuges and thousands of waterfowl production areas. It also operates 66 national fish hatcheries and 78 ecological service field station, the agency enforces Federal wildlife laws, manages migratory bird populations restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program which distributes of millions of dollars in excise taxes on fishing and hunting equipment to State wildlife agencies.

U.S. Geological Survey: a Federal government agency whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Visual Obscurity: a measurement of the density of a plant community; the height of vegetation that blocks the view of predators to a nest.

Wading Birds: birds that have long legs that enable them to wade in shallow water. Includes egrets, great blue herons, black crowned night heron, and bitterns.

Warm Season Grasses: begin growth later in the season (early June). These grasses require warmer soil temperatures to germinate and actively grow when temperatures range from approximately 85 to 95°F. Examples of warm season grasses are switchgrass, big bluestem, Indian grass, little bluestem, and tall wheatgrass.

Waterfowl Production Areas (WPA): prairie wetlands with associated uplands managed to provide nesting areas for waterfowl and owned in fee title by the Service. These lands are purchased from willing sellers with funds from Duck Stamp sales. They are open to public hunting, fishing, and trapping according to State and Federal regulations.

Waterfowl: Includes ducks, geese, and swans.

Watershed: the region or area draining into a river, river system, or body of water.

Western Hemisphere Shorebird Reserve Network (WHSRN): consists of wildlife agencies, scientists, private conservation groups, and governments who endeavor to preserve and manage wetland habitat on a hemispheric scale to aid shorebird survival.

Wetland Easements: a perpetual agreement entered into by a landowner and the Service. The easement covers only the wetlands specified in the agreement. In return for a single lump sum payment the landowner agrees not to drain, burn, level, or fill wetlands covered by the easement.

Wetland Management District (WMD): an area covering several Counties that acquires (with Federal Duck Stamp funds), restores, and manages prairie wetland habitat critical to waterfowl and other wetland birds. The Tewaukon Management District covers the Counties of Ransom, Richland, and Sargent.

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Appendix P. Summary of Public Involvement

In compliance with the National Environmental Policy Act and the Service's comprehensive conservation planning process, the planning team initiated a public scoping process to determine what issues the public would like to see addressed in the CCP and environmental assessment. Issues, concerns, and opportunities were identified at five open houses in the Tewaukon Complex. Prior to the public meetings, the Complex staff discussed the planning process with local county commissioners, sportsmen's groups, other interested groups, and advertised in the local media. Information on the planning process was also available in cafes frequented by community members throughout the Complex. Worksheets on Refuge issues were provided to the public to stimulate additional public input for the planning process. From this initial scoping period, we received 50 worksheets and 11 individual letters. The CCP only addresses some of the issues and is not written at a level of detail that addresses all the input that was received. If further discussion on an issue is included in the CCP, a reference section is noted. Some input was similar and was grouped together. Comments that were received from the scoping process and responses to the input from the planning team follow.

Scoping Input and Responses

1. Fishing

Input: Improve and increase opportunities for fishing on the Refuge. Close fishing access seasonally including boat closure and 10 pm hour limit. Appreciate the fisheries management that has been done on Refuge. Continue to support fishing tournament. Allow quiet boating (canoes)- but no motors or jet skis. Keep area pristine. Extend fishing from 10:00 pm to 12:00 am for additional night time fishing (specifically around the Lake Tewaukon culvert area). Allow fall fishing by boat restricted to the morning hours only, after September 30. New boat ramp on the western side of Lake Tewaukon near the culverts. ***Response:*** The Refuge staff will continue to follow recommendations made by the Service Missouri River Fish and Wildlife Assistance Office in Bismarck who consult with the ND Game and Fish Department regarding fishery management on Lake Tewaukon and Sprague Lake. Each year the fishery is evaluated for size class and stocking numbers are adjusted to maintain the fishery. The current Tewaukon Fishery Management Plan does not recommend developing fisheries in any other Refuge wetlands. Water management for migratory birds (Refuge primary purpose) does not provide water depths to support an overwinter fishery on other water bodies. Plans are to continue the current Refuge regulations which permit seasonal boat use (including motor boats), and fishing from one-half hour before sunrise to 10 pm. Current staffing is not adequate to support increased angling hours. Waterfowl Production Areas are open to fishing according to ND State regulations. Refuge will continue to sponsor the Tewaukon Fishing Tournament as long as cooperation continues with the local sportsmen's clubs. Proceeds of the fishing tournament are used to improve facilities on Refuge lakes. Boat ramps were evaluated, added, and upgraded in 1997 and no plans exist at this time to add additional ramps. See Refuge Public Use Fishing Section for further information on fisheries.

Input: Raise or remove horsepower limit on lakes. No jet skis or waterskiing. ***Response:*** In May 1998 the horsepower limit was removed from Tewaukon and Sprague Lakes. However power boating, skiing, and jet skis are still not allowed on the lakes. Boating for fishing purposes supports one of the six priority public uses on refuges.

Input: All night fishing or longer hours. ***Response:*** Current Refuge hours of one-half hour before sunrise until 10:00 pm will remain in place. Expanding fishing hours on the Refuge may be compatible with Refuge purposes, but it has been determined that funding and personnel needed to support additional hours are not available. Waterfowl Production Areas are open to fishing by State regulations and may be fished all night.

Input: Open Mann Lake to ice fishing. ***Response:*** Mann Lake is managed for waterfowl and, at certain times, may not have sufficient water for a sustained fishery. We have opened areas where it is cost effective to stock and maintain a fishery that can overwinter with little die-off to protect the investment (i.e., Lake Tewaukon and Sprague Lake). No plans exist to open additional Refuge wetlands to ice fishing or any fishing if they are not going to be managed at depths that support fish. See Refuge Public Use Section for further information on fisheries.

Input: Continue size limits on fish. ***Response:*** Refuge will continue size limits until other recommendations are made by the Service Missouri River Fish and Wildlife Assistance Office. So far test netting has shown a definite size increase of sport fish since the limits were put in place and angler success appears to have improved. See Refuge Public Use Fishing Section for further information on fisheries.

Input: Concerned about priority of pelicans over fish. ***Response:*** Management of the Refuge does focus on migratory birds because the Refuge was established for migratory birds. Pelicans frequent other areas besides Lake Tewaukon and Sprague Lake. Lake Tewaukon and Sprague Lake will be managed for migratory birds at levels that support sport fish populations. Management actions that would discourage migratory bird use on the Refuge in favor of fisheries management are incompatible with Refuge purposes and will not be pursued.

Input: More control of carp, either commercial or chemical. ***Response:*** Chemical control of carp over the whole system has been determined to be cost prohibitive and harmful to other species. The Refuge staff will continue to utilize water management to freeze out carp upstream and, when conditions are right, may do limited chemical control. Commercial harvest has been used in the past, but markets and water conditions do not always favor this method. The objective of introducing size limits on walleye and pike was to increase predation on carp.

Input: Stock more pan fish (perch). Suggest stocking perch, sunfish, crappie in lakes for kids. ***Response:*** The Service has stocked yellow perch and black crappie in Lake Tewaukon and Sprague Lake. Most recent releases in 1998 included 63,000 perch fry and 23,400 black crappie fry in Lake Tewaukon and 15,000 perch fry in Sprague Lake. In 1999, 50,000 perch fry were stocked in Lake Tewaukon. Panfish will continue to be stocked in Lake Tewaukon and Sprague Lake and are likely to do better in Sprague Lake due to the vegetative growth in the lake.

Input: Stock fish in Kennedy Slough and Park Lake. ***Response:*** Kennedy Slough is part of a Waterfowl Production Area whose main purpose is breeding, nesting, and migratory waterfowl habitat. Since recent research indicates fish and ducklings compete for the same food sources, the Service will not actively support stocking of these waters. High water conditions may introduce fish from other areas. The majority of Park Lake is privately owned.

Input: Remove snow from roads and ramps for winter fishing. Improve areas for vehicles on east boat ramp (more hard surface area for parking, turn-arounds, and roads). ***Response:*** Mild winters do not require snow removal for winter fishing access. In some years snowfall makes these areas inaccessible. Snow removal by Refuge staff has been done in the past and will continue to be dependent upon equipment condition, staff availability, and funding. The limited use of snowmobiles has been approved for access to fish houses during severe winters. No plans exist to improve surfaces on the east side of Lake Tewaukon. A period will occur during spring thaw when access to these facilities will be difficult.

2. Hunting/Trapping

Input: Continue pheasant and deer hunting. ***Response:*** Pheasant and deer hunting will continue on the Refuge since harvestable populations are available and this use is compatible with the Refuge purpose (See Compatibility Determination Appendix G). Pheasant and deer hunting are also available on Waterfowl Production Areas according to ND State regulations. Non-toxic shot will continue to be a required on all Complex properties for all upland game hunting. See Refuge Public Use Hunting Section.

Input: Englevale Rest Area, there is confusion about waterfowl/deer/pheasant seasons with rest areas. Like this site as a rest area. ***Response:*** The WPAs in this area were set aside as a waterfowl rest area which also restricted small game hunting and fishing from September 25 through November 30. Due to high waterfowl numbers and landowner response, this rest area was dropped in 1998 and is now open to waterfowl hunting and other wildlife hunting according to ND State Regulations. The use of non-toxic shot for waterfowl and upland game hunting is required.

Input: Close pheasant hunting on Refuge after December 15. ***Response:*** The Refuge will continue a pheasant season on the day after deer gun season to the end of the ND general pheasant season. The Refuge currently has a limited pheasant season (approximately 42 days compared to the 96 days by ND State regulation) to reduce conflicts with other hunting opportunities and migratory bird use. Research has shown that the removal of 90 percent or more of the pheasant roosters will have no affect on pheasant populations. Most of the roosters not managed by hunting would die from natural causes, predation, starvation, disease, exposure or other threats. Weather dictates population trends in northern pheasant habitat. No sound biological reason exists to shorten the pheasant season (See Refuge Public Use Hunting Section).

Input: Want a youth waterfowl season on or near the Refuge. ***Response:*** The Tewaukon National Wildlife Refuge's purpose is for migratory birds. This use conflicts with a Refuge primary purpose, serving as a waterfowl rest area during migration. Opportunities for youth waterfowl hunting exist on the adjacent ND Game and Fish property and on all Waterfowl Production Areas in Ransom, Richland, and Sargent Counties.

Input: Have recreational muskrat trapping on Refuge. ***Response:*** The Refuge had recreational trapping prior to 1998; however, the interest in trapping decreased due to the fur prices which made it difficult to justify the staff time for only one interested trapper. If fur price and interest increases, this use will be reevaluated. Recreational trapping is available on all Waterfowl Production Areas in Ransom, Richland, and Sargent Counties.

Input: Continue Youth Deer hunt. ***Response:*** Refuge will continue the youth deer hunt on the Refuge to encourage youth hunters. This use is compatible with the purposes of the Refuge and provides valuable experience for the youth hunters. See Refuge Public Use Hunting Section.

Input: Open Refuge to predator hunting. Encourage shooting of fox, raccoon, and skunk. ***Response:*** At this time, the Refuge will not be opened to predator hunting. A long process must be completed to open any new hunting programs on a National Wildlife Refuge including public input ,which takes up to two years to complete. Since an opportunity for this type of hunting exists on the neighboring State land and on all Waterfowl Production Areas, it is viewed as a non-priority issue for the Refuge. Expanding hunting opportunities may be compatible with Refuge purposes, but it has been determined that funding and personnel needed to support additional hunting are not available. Research indicates that fall and winter predator hunting do not affect ground nesting bird success that following spring.

Input: Snow goose hunting on Refuge (both open a season and keep the Refuge closed). ***Response:*** The Refuge will not be opened for any waterfowl hunting as it conflicts with Refuge purposes. Snow geese typically use adjacent private land to feed during migration, providing opportunities for hunters. Providing a closed rest area also gives waterfowl a place where they are not disturbed which generally allows birds to remain in the area for a longer period of time. Birds tend to leave an area sooner if they are continually disturbed.

Input: Establish waterfowl retrieval zone. ***Response:*** Currently, no plans exist to provide for a waterfowl retrieval zone on the Refuge. Retrieval zones can be exceptionally difficult to enforce and can increase waterfowl disturbance. The majority of the waterfowl shooting in the area occurs on open crop fields and marshes located on the adjacent ND Game and Fish Wildlife Management Area.

Input: Take care of wildlife for hunters. ***Response:*** The Tewaukon National Wildlife Refuge was established as a Refuge and breeding ground for migratory birds and other wildlife. Management will benefit many species of wildlife and hunting will continue where compatible with the Refuge purpose (i.e., deer and pheasant). District lands were acquired to assure the continued availability of habitat capable of supporting migratory bird populations at desired levels. Waterfowl Production Areas are open to hunting of all species according to ND State regulations and Service special regulations.

Input: Make sure hunting access continues, as it may not be available elsewhere. ***Response:*** Public hunting access will continue on Waterfowl Production Areas and for deer and pheasant on the Refuge. See Refuge and District Public Use Hunting Section.

Input: Do not change deer hunting program; it is a safe place to hunt. ***Response:*** The Refuge provides a deer hunt that restricts the number of deer gun permits and schedules other season dates of hunting seasons to limit conflict and provide safe hunting experiences. Unless problems occur, this program will be conducted as it has been in the past. See Refuge Public Use Hunting Section.

Input: Refuge staff hunt on other Refuges as self evaluation. ***Response:*** Currently, no formal arrangement exists, however, many of the Refuge staff do hunt at other Refuges in this State as well as other states.

Input: Have hunters provide feedback on hunting experiences. ***Response:*** The Complex does receive some informal feedback from hunters who hunt on the Refuge or on the District. Many of the comments are positive and support the current Refuge programs. Periodically Refuge deer hunters are surveyed to determine how they rate their experience.

Input: Refuge is a Refuge for wildlife foremost. Use hunting to control excess populations. Concerned about the attack on hunting by groups such as PETA. No one should have a say about the use of hunting (or not) except Service and the State F&G involved. ***Response:*** The Refuge currently uses the deer hunting for population management. We also have concerns that anti-hunting sentiments may restrict our ability to use a very useful management tool for the purpose of controlling wildlife populations. Congress, in recent legislation (1997 Improvement Act), has identified hunting as one of the six priority wildlife-dependent public uses on Refuges. We actively discuss our hunting seasons and regulations with the ND Game and Fish Department.

3. Habitat

Input: More emphasis on tallgrass prairie and grasslands for migratory birds. More grassland easements with perennial cover to improve wetland and water quality. Put emphasis on grasslands on the District. Decline in grassland birds: Accept what we cannot change. If weather keeps potholes wet, we will have a lot of birds, when dry we won't. ***Response:*** The Tewaukon Complex staff intends to increase its efforts in the protection (easement and fee), restoration, and reestablishment of tallgrass prairie especially for grassland nesting birds as well as improving the wetland and water quality of the area. See Refuge Habitat Section.

Input: Use seed source from adjacent private landowners (pay them). ***Response:*** The Complex is dependent upon budgets from year-to-year that determine the amount of seed we can buy. We have relied on past seed sources in North Dakota and Minnesota from reputable companies that have seed with a genetic makeup that is similar to those from this area. If a good seed source was available from private landowners, we would be interested in knowing about it.

Input: Less grassland. ***Response:*** Grassland habitat is needed in the area to provide sufficient nesting cover for many species of migratory birds and resident wildlife including pheasants. Managing grassland habitat will still be a primary focus of Refuge management efforts as this is the limiting factor affecting ground nesting birds in the Complex. See Refuge Habitat Grassland Section.

Input: Refuge needs to be a reservoir of all types of wildlife for whole area around, as there is no habitat in surrounding lands. More efficient cropping has meant less grassland habitat. ***Response:*** Managing Refuge habitats will still be a primary focus of Refuge management efforts. These habitats will support a variety of wildlife populations that are found in this area. See Refuge Habitat Section.

Input: More weed management, especially for thistles. More control with chemicals and mowing. Give Refuge staff more leeway to use chemical controls, and more discretion at local level to use available chemicals that minimally affect wildlife. Wants to continue working with the Service on bio controls and bug releases. The Refuge doesn't manage its weeds, so why is private landowner penalized for not controlling weeds? Weed control and options at local level. Spray weeds if can't use insects. ***Response:*** Current management for weeds include spurge beetles (over a million and a half beetles released to date on the Complex), mowing of thistle, and chemical control of thistle and spurge. Expenditures in 1999 included $13,464 in chemical cost and $6,551.05 in labor. Control of weeds included 511 acres of spurge chemically treated, 115 acres of thistle chemically treated, 154 acres of spurge grazed by sheep, 297 acres of thistle mowed, 40 acres of spurge beetles, and 12 acres of thistle insect control. Current limitations on spraying include staff size and high water areas making it impossible to access some locations. Because of the size of the District, the staff asks that the public provide information on problem areas. The Complex is limited to certain chemicals that have prior approval through the Regional Office and are low in toxicity to wildlife. The Complex makes every effort to control weeds on fee title properties and will continue to do so. We will continue working with local groups to establish spurge beetles in other areas as our released beetle populations increase. See Refuge Habitat Grassland Section.

Input: More trees on WPA's for food and cover for deer. Shelterbelts, if planned right, winter deer and other wildlife and melt down snowbanks to fill wetlands. ***Response:*** Research indicates that some grassland nesting migratory birds avoid nesting adjacent to trees or other tall (over 3½ feet) woody vegetation. Grassland nesting bird populations are in sharp decline due in part to loss of grassland habitat lacking in trees. Deer populations in the area are currently on the rise and reaching a maximum that the local habitat can support. The historical natural vegetation of the area was primarily grass. Only a few trees were located in riparian areas. White-tailed deer populations historically were limited to these riparian areas. The Service will continue to emphasize managing grassland habitat for migratory birds which does not include planting of additional trees. This management will still support white-tailed deer populations.

Input: Suggest grazing as the only grassland tool used. Use grazing and fire as management tools as we get more grassland. Grasslands: Hay with sickle mower set low only-objective is to renovate grassland. Use livestock for improving streambank vegetation. Done correctly it can be effective. High impact/low duration approach. ***Response:*** Managers prefer to have several tools to utilize for the management of grasslands and other vegetation. This allows for the most efficient and beneficial management for each area. Some of the tools currently being used for grassland management include haying, grazing, and fire. In degraded areas, some additional tools include: interseeding for additional vegetative diversity, farming or chemicals to control undesirable vegetation. Many of the District properties are too small to sufficiently rotate cattle through or no cattle are available in the area. Difficulties also exist in funding the cross fencing of areas and providing sufficient staff time to manage and monitor areas See Refuge Habitat Grassland Section.

Input: Need more emphasis on District linking habitat blocks to offset habitat fragmentation. Will increase nest success. ***Response:*** This is a concern of the Complex staff and the Service. The Service will continue to look for ways to connect habitat blocks not only for nest success but to facilitate dispersion of native species and enhance gene flow. See District Habitat Grassland Section.

4. Management

Input: Common sense management. Management decisions at local level. Local input to management decisions. ***Response:*** The management of the Tewaukon National Wildlife Refuge Complex is based on scientific research, years of experience, and is guided by legislation and Service policies. Local management decisions often take into account the local concerns and history of the area.

Input: Focus on pro-active approach to issues. Improve Service credibility. ***Response:*** The Complex staff has and will continue to focus efforts on keeping the public informed, provide education and assistance when required. We are also concerned about credibility and will continue to make efforts to communicate Complex directions, strategies, and policies. See Refuge Public Use Environmental Education and Outreach Section.

Input: Wants Refuge to pay same property taxes as a private owner would for same piece. ***Response:*** Federal agencies are exempt from paying real estate taxes. However, Congress realized the hardship placed on local government and implemented payments in-lieu-of-taxes. In the case of the Fish and Wildlife Service, these payments are called Refuge Revenue Sharing payments. Each year the Refuge pays their Refuge Revenue Sharing from funds generated by the National Wildlife Refuge System from commercial activities on Refuges such as oil, grazing, haying, etc. The Refuge Revenue Sharing Act stipulates that 3/4 of 1 percent of the appraised value of Service lands would be paid to counties (not based on the counties evaluation for taxes, sometimes results in higher or lower payments). From 1965 to 1975, 100 percent of this entitlement was paid to the counties. Since then, Refuge revenues have not been sufficient to pay 100 percent. Congress has passed some supplemental appropriations but never enough for full entitlement. For newly acquired properties in North Dakota, a one-time lump sum is paid (at the current Treasury Bill rate) to make up the difference between the current County taxation rate and the last Refuge Revenue Sharing payment to the County. Currently, several ND Congressional offices are working on legislation to ensure that 100 percent of the Refuge Revenue Sharing Payment is available in the future. Passage of the current CARA bill would provide additional funding to increase Refuge Revenue Sharing. Voicing your concern to the congressional offices is one way to encourage full payment to counties. This issue is of concern to Fish and Wildlife Service staff throughout ND who wish to continue a good working relationship with the counties. The Refuge also pays property tax on the house located near the headquarters, this is a Regional Service decision and is not done in other parts of the country.

Input: Requests to gas pocket gophers along fence lines or ditches. Requests to control muskrats on road right-of-Way through Refuge. ***Response:*** The management of rights-of-way through Complex lands are a joint responsibility between the lead road management agency (Township, County, or State) and the Complex staff. The staff has worked with, and will continue working with these agencies to address road issues. For example, we have agreed to control muskrats along Refuge roads with Complex staff when we get specific requests. The staff has no plans to control, or permit others to control pocket gophers along Complex lands.

Input: Continue to have flexibility to burn wetland vegetation on wetland easements. ***Response:*** The wetland easement policies allow for the issuance of a permit to burn wetland vegetation once every five years. This allows for the regeneration of these wetlands with the removal of layers of dead vegetation layer. This is a written policy and the staff will continue to follow the written policy in the District.

Input: Current easement enforcement is inflexible and detrimental. Need alternatives, balance of long-term and short-term contracts. ***Response:*** When the government initially purchased easements (real property interest) it did not expect to have to actively enforce the terms of the agreement. However, with the development of more effective and efficient draining equipment it has been necessary to enforce the property interests that were purchased. Easement enforcement follows specific policies and court decisions in order to protect the wetlands and grasslands for wildlife use. The wetlands may be farmed in dry years so the areas are not always inaccessible to the farmer. An analogy that could be used is a farmer leasing a landowners farm, planting a crop, and then the landowner removing the crop. This would not be fair to the lessee and would void the rental agreement. The Service is trying to protect the interest that was purchased in the agreement. Flexibility can occur in certain areas including health and safety issues. Complex staff have been working with landowners to resolve flooding issues that have developed in the last four years. Long-term contracts are the best value for the government's money, protecting resources indefinitely, and we will continue to look at perpetual easements from willing sellers. Short-term contracts do not provide a large enough payment to the landowner to make them saleable in the area.

Input: Hold water back in Refuge pools longer in spring runoff season. If feasible, provide some type of water control on lakes that allows flood control. Work with water commission. Water management plan should help prevent flooding in the Red River Basin. ***Response:*** Refuge pools were designed as shallow marshes for waterfowl use. They do not have the capability to hold large amounts of water, especially the runoff that we have seen in the last four years. Our management plans do take into account spring runoff, and the goal each year is to pass as much water in the spring as early as possible then slowly release flows to prevent excessive flooding downstream. Some rainfall events make this impossible and the frequency of flooding has increased in the recent wet cycle. Fluctuations from rainfall can increase water levels up to six feet in 12 hours. These large rain events can be very difficult to manage with our shallow pool capabilities. We will continue to work with local water boards, Resource Conservation Districts, and ND State Water Commission on water use and management. See Refuge Managed Wetlands Section.

Input: Concerned about illegal collection of Echinacea species (Purple coneflower). ***Response:*** This is also a concern of the Complex staff and efforts have been made to patrol areas on the Complex where known populations exist. So far no illegal collection has been noted but if evidence is found, regulations will be enforced. It is illegal to remove any plants, animals or parts, historic and prehistoric artifacts from a National Wildlife Refuge property unless covered by hunting season or other valid permit.

Input: Research seems to be focused on what will prove presumptions, not unbiased results. Research projects need to be longer term to be significant. ***Response:*** The majority of the research conducted on Complex lands are administered by colleges, universities, other governmental agencies or research groups. Each research project conducted on the Complex must be reviewed by Refuge staff and determined to be useful for management on Complex properties. The majority of the research projects are to resolve or answer management questions. The Service encourages long-term research projects on its properties.

Input: Continue to get local input in the planning process periodically through the 15 year period. The CCP should have at least a 100 year orientation. Build flexibility in the CCP to reflect changes in land use and farming practices adjacent to the Refuge, and adjust for resulting changes in wildlife needs. ***Response:*** The CCP will guide management on the Complex for the next 15 years. A copy of the Plan will be provided to all those that have interest and public input will continue to be a priority. The Complex staff will review the Plan every five years to determine if it needs revision. In the case of severe circumstances, the project leader has the authority to modify management actions to respond appropriately. The Plan will be revised no later than 2015.

Input: No more land acquisition. Enough taken out of production already. Work with private landowners instead. ***Response:*** The Complex staff will continue to look at all options in protecting wildlife habitat including acquisition from willing sellers (upon concurrence with County commissioners and the Governor), the purchase of long-term easements, and any other process that is available. See District Habitat Grassland Section.

Input: Manage water for multiple benefits when possible. ***Response:*** The water management plan will continue take into account management for waterfowl, other migratory birds, fisheries, recreation, facilities maintenance, and limited flood control. Local conditions including weather, dam maintenance, and local water conditions will also be a factor.

5. Resident Wildlife

Input: Stock wild pheasants at Refuge. Work with Game and Fish and Pheasants Forever to transplant wild birds (Pheasants) on the Refuge. Put a wild flock of pheasants in predator fence. ***Response:*** Currently, the Refuge pheasant population is doing well. This nonnative species is thriving as a result of management practices that benefit waterfowl such as predator management, habitat management, and crop management. The National Wildlife Refuge System exists for the protection and management of plants and animals native to the United States. Service policy is to prevent further introduction of nonnative species except when a species would have value as a biological control agent. We do not plan to augment the Refuge pheasant population. See Refuge Wildlife Nonnative Section.

Input: Has observed that pheasant hunting is best when there are large stands of cattails. Cattail cover more effective than food plots. Wants to see cattail spreads that are not allowed to flood and die off. ***Response:*** Providing a greater range of conditions as described in the wetlands section of the Plan should yield more cattails in a given year. Wetlands will still be managed to provide migratory bird benefits. See Refuge Habitat Managed Wetlands Section.

Input: Work with ND Game and Fish and Pheasants Forever to transplant wild birds on the Refuge. Plant more food plots. ***Response:*** Since pheasants are a nonnative introduced species, the Refuge will not carry out management activities that specifically encourage population expansion. Other management activities for migratory birds that will benefit pheasants include cropland management, predator control, and grassland cover improvements. See Refuge Wildlife Nonnative Section.

Input: Stock and provide food for wild turkeys. ***Response:*** Due to the lack of suitable turkey habitat, no plans exist at this time to stock wild turkeys.

Input: Hawks, owls are taking too many pheasants. Wants more protection for pheasants from aerial predators. Need to deal with avian predators. **Response:** Raptors are protected under the Migratory Bird Treaty Act and cannot be directly managed. However, historical records indicate that these species were less numerous when trees were limited to riparian areas. Raptor populations increased in response to the increase in nesting and perching trees. Some areas will be targeted for removal of these large trees. See Refuge Habitat Grassland Section.

Input: Continue resident wildlife management. ***Response:*** Complex staff will continue to manage resident wildlife. The Refuge was established to benefit migratory birds and other wildlife. Most CCP management actions are planned to benefit migratory birds. These actions will benefit resident wildlife by providing habitat that will favor species that utilize grasslands. Several CCP goals directly address management for resident wildlife. See Refuge Wildlife Migratory Birds and Other Native Wildlife Sections.
Input: Work with U.S. Forest Service and ND Game and Fish to encourage prairie chickens on Stacks Slough and south unit of Grasslands. ***Response:*** The Complex staff will continue to work with Forest Service and Game and Fish to evaluate Complex lands for prairie chicken releases. Currently, not many habitat blocks are on the Complex that are large enough to support prairie chicken releases. Efforts will continue on providing appropriate habitat for resident species. See Refuge Other Native Wildlife Section.

6. Farming

Input: Cropland for wildlife (more, less and none). Establish upper limit on cropland, wildlife needs come first. Put food plots on WPAs adjacent to CRP or on private lands. Unwise to plant crops for waterfowl on Refuges. ***Response:*** The Refuge will maintain no more than 500 acres of cropland to reduce depredation on adjoining properties; provide food for both migratory and resident wildlife; and to prepare a clean seedbed for grassland re-seeding. Previously, up to 1,000 acres was farmed; however, this was more acreage than needed to provide food for wildlife. Grassland habitat will still be the primary focus of Refuge management efforts as this is a limiting habitat component in the area. Tewaukon Complex staff will continue to utilize crop management for seedbed preparation on Waterfowl Production Areas. See Refuge Wildlife Migratory Birds Section.

Input: Feed geese in spring but not in fall to manipulate when they use the area. ***Response:*** Current cropland management provides for some green browse in the spring and fall. Only post harvest grain is available in the fall. Standing crops are mowed for waterfowl in the spring. Refuge wetlands also provide food sources throughout the year. Typically waterfowl rest on the Refuge in the fall and feed in the adjacent private farm fields. No plans exist to require additional tillage in the fall to limit food sources on harvested Refuge fields.

Input: Put vegetative buffer zones around wetlands in Refuge farmland. ***Response:*** Biologically this is a good idea; administratively it is more difficult to achieve. Portions of wetlands in Refuge farmlands are only farmed in dry years. The Refuge staff recognize the negative effects cropland tillage can have on prairie wetlands with increased sedimentation and chemical impacts. These plowed wet areas provide important migratory habitat for shorebirds.

Input: Less farming on the Refuge due to problems with chemical runoff into the wetlands. No farming on the Refuge. Farming on Refuge should be enough for deer and pheasant and no more. ***Response:*** The current farming program is conducted on less than 6 percent of Refuge lands (approximately 500 acres) and provides benefits for migrating waterfowl and resident wildlife. It also reduces impacts to adjacent private crop and hay fields. Chemical use on these farmed areas is limited to chemicals with a low toxicity to wildlife. The Refuge staff will continue to evaluate the use and need of these areas and will modify the program as necessary. See Refuge Wildlife Migratory Birds Section.

7. Recreation

Input: Provide overnight camping. ***Response:*** Overnight camping and developed facilities are available on an adjacent County property at Silver Lake. Current staffing and funding are not sufficient to support this activity on the Refuge. Overnight camping permits have been issued to groups that have incorporated camping into natural resource education (i.e. Boy Scouts). We will continue to consider special use permits in these cases.

Input: No development of roads at Stacks Slough. Wants boat access to Stacks Slough and road access to marsh. ***Response:*** At this time, the Service has no plans to develop roads at Stacks Slough. Several section line roads and trails already allow access to the area. Vehicle traffic is not allowed off section line roads and trails on Waterfowl Production Areas.

Input: Continue to monitor and evaluate public uses and its effect on wildlife. ***Response:*** Complex staff currently monitor public use and wildlife impacts in conjunction with their daily activities around the Refuge. For example, in 1999 boat use periods on Refuge lakes were modified to limit disturbance to migratory birds after boat use periods had been extended the previous year.

Input: Jet ski regulations on Lake Elsie. Suggests a focus group for Lake Elsie. Keep Lake Elsie as an Easement Refuge and retain water rights. What does or how does the "No Boats" on south side of Lake Elsie relate to the easement language? Fall management of 1073 for 2 feet cushion to take winter increases. Create connection between Murphy Slough and Lake Elsie where Lake Elsie provides water to Murphy Slough. At 1073 water won't go to Murphy. ***Response:*** Lake Elsie National Wildlife Refuge interests were divested by Congress by Public Law 105-312 in October of 1998 due to an increase in recreational use and a loss of waterfowl values. Water based recreation regarding types of craft, use zones, and water elevation management are the responsibility of the State and other local government now that the Service has divested its interest in Lake Elsie NWR (See Easement Refuge Section). The Service has retained an easement interest in Murphy Slough. Additional survey data would have to be available to determine the relationship of Murphys Slough and Lake Elsie at 1073.

Input: More road access for wildlife viewing especially during migration and peaks. ***Response:*** Currently, no plans exist to open additional road areas which would increase migratory bird disturbance. One of the purposes that the Refuge was established was to serve as a rest area for migratory birds. Currently, a number of areas and observation points are available to the public for viewing of wildlife during migration and peaks.

Input: Liked having picnic areas. ***Response:*** Refuge staff will continue to maintain the picnic areas as support for the Refuge fishing, hunting, and wildlife observation programs. These picnic areas are popular areas for anglers and hunters to rest, eat, use facilities, and are some of the primary access points for boat launching and fishing. These areas have little impact on wildlife due to the small amount of acreage involved.

Input: Non-consumptive multiple use is best unless biological control of a species is needed. ***Response:*** The Complex staff attempts to provide multiple use on the Refuge including fishing and hunting of pheasants and deer. The Improvement Act stated that six priority public uses should be considered if they are compatible with the Refuge purpose. These include hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

Input: The Refuge has become a "people Refuge" not a wildlife Refuge. Do not increase public use from present level unless it benefits wildlife. ***Response:*** Refuge staff have attempted to balance wildlife use and public use. The majority of public use is limited to the east side of County Road 12, and the west side is closed to public access to provide for relatively undisturbed wildlife habitat. If people were excluded from the entire area, it would be difficult to obtain public support of our wildlife programs if no one realized they were there. Our primary mission of the Service also has the clause "for the benefit of the American People."

8. Education and Interpretation

Input: Focus on pro-active approach on issues, also as a regular occurrence for coordination. Recognize the importance of outreach and continue efforts such as Jr. Duck Stamp, etc. Thinks school programs are great. Work on having joint programs with ND Game and Fish Department. Work with 4-H, Scouts, to have a Tewaukon Days at Stacks Slough. Education about good land management practices (be an example) and community involvement will allow the Refuge to impact a larger landscape. Work with others to educate and market products. ***Response:*** In the last 10 years, the Complex staff have expended considerable effort in trying to provide information, education, and outreach to the local communities and beyond. Our hope is to continue this effort as funding and staff allow. See Refuge Public Use Section.

Input: Development of Stacks Slough: involve school, community, and other groups in a long-term environmental education center and effort along with a trail. ***Response:*** The Complex staff has worked with local groups to improve interpretive facilities and will continue to work towards improvement of educational and additional interpretive facilities. A prairie interpretive trail was developed in 1999.

9. Ecosystem (Partners)

Input: Continue to work with local waterboards and soil conservation districts for input, cost shares and funding, and grass seeding. Improve coordination with Regional Conservation Districts. Need to work together to implement wildlife management on large areas (landowners, ND Game and Fish, Service, and other groups). ***Response:*** The Tewaukon Complex staff will continue to work with local waterboards, government agencies, and nongovernmental agencies to provide for the best possible wildlife habitat in the area. The Complex staff realizes that the majority of the lands are in private landownership, and in order to implement best wildlife management practices on large areas, we need to work cooperatively. *For a list of our current partnerships, see Appendix I.* We will also continue to work with local, County, and State government to provide input on projects that may affect Complex resources. See Refuge and District Partnership Sections.

Input: Continue to work with private landowners to create win-win results for wildlife and landowners. The CCP should make provisions for small family farm units that practice innovative techniques that are respectful of the environment. ***Response:*** Tewaukon Complex staff intends to continue to work with private landowners to improve and develop wildlife habitat. Efforts will continue to develop additional funding, share resources, and form additional partnerships for the benefit of wildlife on private lands. Other agencies may be better suited to provide benefits for the family farm. Complex staff will try to provide interested landowners with a variety of information on available opportunities. See Refuge and District Partnership Section.

Input: Need more education and communication between managers, researchers, biologists, and private landowners. Go to annual community clubs meetings to get management input. Include U.S. Department of Agriculture representatives in CCP planning project. ***Response:*** In the last 10 years, the Complex staff have expended considerable effort in trying to provide information, education, and outreach to the local communities and beyond. Our hope is to continue this effort as funding and staff allow. Complex staff are available for group tours and presentations and educational programs. Outreach will continue to focus on improved education and communication. The Complex staff will continue to request input from all interested parties during the Comprehensive Conservation Planning process and when significant management changes are proposed. See Refuge and District Environmental Education and Public Outreach Section and Partnership Section.

Input Outside the Scope of the CCP

The following Input is not addressed in the planning process because they are the primary responsibility of other government agencies or organizations or are outside the scope of this planning process (National topics):

Input: Be careful of waterfowl. Numbers seem to be too high, i.e. snow geese. Some waterfowl populations need drastic reductions; spring seasons? ***Response:*** These items are handled by the Flyway Councils and the Migratory Bird Office in consultation with the States who set seasons and limits. Complex staff do provide input on large scale issues, like snow goose issues, at meetings and through other planning efforts.

Input: More emphasis needs to be placed on keeping species from ending up on the T&E list, not waiting until they are already on it. ***Response:*** Endangered Species listings are handled by the Ecological Service branch of the U.S. Fish and Wildlife Service. Complex habitat programs like grassland easements can maintain habitat supporting rare species like Dakota skipper and white lady's slipper that may help prevent endangered species listings.

Input: Depredating birds on private land would be available for hunting there. Goose populations: Local numbers have reached top of acceptable levels. Problems with goslings in row crops. Spring goose depredation on crops-wants compensation or help running them out. In ND after November 20 would like 2 to 3 full days per week of goose hunting north of Highway 2 to push birds to southern North Dakota sooner. Longer hunting, day long hunting on snow geese, and a spring goose season. More discretion at local level to use available options for minimum wildlife damage. Continue coordination with Animal Damage Control to address damage control issues. Access to Federal land to help adjoining landowner depredation problems. Provide options to landowners for wildlife damage to crops. ***Response:*** The Migratory Bird Office works with the States and USDA, APHIS Animal Damage Control Program to resolve migratory bird crop depredation issues. The Complex staff will continue to work with the agencies and landowners involved, however, these other divisions have the primary responsibility for these problems.

Input: Need to be locally sensitive to bird and deer populations when setting limits for State wildlife species. Out-of-state waterfowl hunter days. State control program of predators. ***Response:*** The agency with primary responsibility for these items is the ND Game and Fish Department and the North Dakota State Legislature.

Input: Transplant wild pheasants from Refuge where population is high to Refuge or private land where population is low. ***Response:*** The ND Game and Fish Department has the primary responsibility for the management of resident game including pheasants. Any releases or transplants from or to Service lands would require discussions with the ND Game and Fish Department and Service approval.

Input: Improve Nickeson Bottoms-access roads to transport boats and gear to the marsh. ***Response:*** The access point for this area is managed by the ND Game and Fish Department and is located on the Tewaukon Wildlife Management Area.

Input: CRP weed control assistance and tree plantings in CRP. ***Response:*** The CRP program is the primary responsibility of the Department of Agriculture. ND Game and Fish also works with landowners to provide shrub plantings on CRP.

Input: Suggest a Texas crossing on Hwy #1 (Richland County) instead of a culvert. ***Response:*** Road maintenance is the responsibility of the respective State, county, or township entity. The Complex staff consults with these agencies only when actions affect property interests of the Service. The agency can then select from a range of alternatives that will not impact the Service's interests.

Other input which cannot be addressed in this Plan include items that are regulated by laws which would take an Act of Congress to change.

- Avian predator hunting.
- Endangered species; limit of number of listed species, target numbers for de-listing.
- Changes in the migratory bird laws.

Draft CCP Input and Responses

The Draft CCP was released in June of 2000. It was mailed to over 400 people and was available on the Service web site. An open house was held on June 27, 2000, to answer questions and take comments. Only a few comments were received by the end of the 30-day comment period, and several requests were made to extend the comment period for an additional 30-day period. The comment period was extended into August. During this time meetings were set up with local sportsmen's clubs, county commissioners, and other groups to answer questions and discuss concerns. All public comments received were considered in the final plan. Sixteen letters were received from groups and individuals on the Draft CCP. Many of the comments included support for the Plan. Public input that was not previously addressed in the Scoping Input and Response Section and the planning team's response to the input follow.

National, Regional, and State Group Input

Animal Protection Institute, The Fund for Animals, Friends of Animals, Earth Island Institute, and In Defense of Animals

Input The preferred alternative is unacceptable because of its continuance and/or expansion of recreational and predator trapping of furbearing mammals and of hunting of deer and ring-necked pheasants (an exotic species) as well as the increase of other recreational activities that are potentially detrimental to wildlife. ***Response*** Deer hunting is utilized as a Refuge management tool to ensure that populations do not damage the habitat they need to survive or grow to levels that may be severely impacted by disease or winter weather. Hunters are the best tool managers have to replace large natural predators that were extirpated by human settlement. The population information in the Draft CCP was developed primarily through staff observations of deer herds (300 in the winter), impacts to vegetation, adjacent crops and hay supplies, and ND Game and Fish Department monitoring information. Pheasant hunting is a recreational opportunity offered on the Refuge. A wide variety of research indicates that pheasant hunting (limited to males) does not impact populations. Weather is the primary factor that regulates pheasant populations.

The Draft Comprehensive Conservation Plan (CCP) attempts to balance wildlife needs and public recreational opportunities (see Public Use and Recreation Sections). The Refuge Improvement Act recognizes the importance of compatible wildlife-dependent recreation, and the refuge managers are charged with considering these recreational uses on Refuge lands where they are shown to be compatible with the purpose of the Refuge (see Compatibility Determinations Appendix G). Limited pheasant and deer hunting are compatible recreation opportunities on the Refuge that do not negatively affect these animal populations. Pheasant and deer hunting are permitted on WPAs by statute.

Documentation of predator impacts on waterfowl nests has been conducted on the Refuge for the past 12 years. Ground nesting bird nest predation still occurs when predator control is conducted, which indicates that small predator populations are still healthy. The predator control strategy was developed to maintain a viable self sustaining population of ground nesting waterfowl that has the potential to increase (30 percent Mayfield). Research indicates that mallard nest success must be approximately 15 percent Mayfield to be self-sustaining. In some years, nest success has fallen below the self-sustaining level when predator control is not conducted on the Refuge.

Recreational trapping has not taken place on the Refuge recently due to lack of interest, however, may be considered in the future based on demand. WPAs are open for recreational trapping by statute.

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Input Need for a rigorous biological assessment and inventory of all flora and fauna inhabiting the Tewaukon National Wildlife Refuge. Complete prior to any management. *Response* Complex staff agree with a need for biological assessments and inventory of flora and fauna. Most objectives include monitoring strategies. Information on the particulars of the monitoring is included in the Monitoring Section of the Plan. Many of the strategies developed in the Draft CCP are attempts to collect better information about unknown populations such as grassland nesting songbirds, reptiles, and amphibians. Ideally, baseline data would have been gathered prior to management action. However, management has been ongoing since 1935 and stopping that management at this stage would be detrimental to wildlife that management has favored.

Since management was initiated, Refuge employees have tried to utilize available research to develop a best management practices approach. A great deal of the management work that has been done in the past is not likely to be detrimental to many species in a fragmented landscape. This approach is documented in past management planning efforts. For example, much of the Refuge was farmed prior to designation. Planting grassland cover on old farm fields based on research recommendations has provided a lot of important wildlife habitat for grassland nesting waterfowl. The CCP continues and refines this approach and includes strategies that consider block size, species composition, and structure components the grassland cover should have in order to benefit grassland nesting songbirds as well. The compatibility of management activities will continue to be reviewed as additional information becomes available.

Input The incompatibility of recreational and commercial killing of wildlife on the Tewaukon NWR and the use of Refuges by consumptive and non-consumptive users. *Response* Information was provided in the Compatibility Determinations (see Appendix G) concerning these uses. The proposed uses of recreational hunting and trapping were not found to be incompatible with the purposes of the Tewaukon NWR. Deer hunting and predator control are actually used to manage wildlife offsetting the loss of large natural predators or the growth of small predator populations caused by the drastic changes to the landscape over the last 100 years. Theodore Roosevelt, who established the National Wildlife Refuge System, was an avid hunter and supporter of active wildlife management. Wildlife populations are impacted by landscape changes which put them "out of balance." Management strategies are developed to ensure that Refuge habitats will support healthy and balanced populations of wildlife.

Near large population centers the demand for non-consumptive wildlife recreation may be higher than the demand for consumptive use. While non-consumptive wildlife recreation on the Great Plains is growing, consumptive wildlife recreation is the most common form of wildlife recreation and the demand is high. The majority of our Refuge visitors are consumptive users. The CCP attempts to balance consumptive and non-consumptive uses on the Refuge and provide opportunities that are compatible with Refuge purposes.

Input Development of long-term, effective, humane, and socially acceptable management strategies to protect nesting waterfowl. ***Response*** In the Great Plains, trapping is a socially acceptable management tool. Other more humane tools that are used and identified as strategies in the Draft CCP include predator exclosure fences. At this time, animal population control through sterilization is cost prohibitive, labor intensive, and unproven as a management tool.

A number of Draft CCP strategies address habitat loss and fragmentation and its impacts to nesting waterfowl. The Service is still acquiring habitat and utilizing predator fences on the Tewaukon Complex. As noted in your letter, without large budget increases, these approaches will not be funded at a level that will improve low waterfowl nest success significantly in the near future. As a result, in some years the Refuge waterfowl nest success will be too low to sustain populations. Predator control is the best tool to address waterfowl populations that are not sustainable. Your reference to the source, Rimmer and Deblinger 1990, provided to support the use of non-lethal predator management as more effective, discusses avian predator control on shorebirds. Only mammals are discussed in the Refuge CCP predator control strategy.

Input Snowmobiles for ice fishing access and ice fishing should not be continued on the Refuge. ***Response*** The Final CCP devotes an entire section to wildlife disturbance where additional information can be reviewed. Information about the limitations and regulations concerning ice fishing and snowmobile use on Lake Tewaukon and Sprague Lake in order to reduce impacts to wildlife and provide safe wildlife-dependent recreation for the public is discussed. Snowmobiles are only used for access to ice fishing when snow conditions do not provide clear access for cars and trucks. Wintering wildlife populations seldom use lake ice. The Final CCP recognizes disturbance of wildlife associated with recreation and strives to balance the use. A strategy to monitor wildlife disturbance and evaluate additional research is still included in the Final CCP The Refuge Improvement Act recognizes the importance of compatible wildlife-dependent recreation and the need to balance the needs of wildlife with the secondary use of public recreation.

Wildlife Management Institute

Input Critical to have ND Game and Fish Department involvement. ***Response*** The Complex staff recognized this (especially with ownership of State lands adjacent to the Refuge and in the Complex) and requested involvement at the beginning of the planning process. The ND Game and Fish Department committed their area manager to be involved as a planning team member. The agency also provided comments on the Draft.

Input Identification of outcomes without additional resources and priorities among goals. ***Response*** The majority of the objectives in the Draft CCP are already being accomplished in a limited capacity. Additional funding and staff will allow the staff to spend more time on monitoring and habitat management. Rather than prioritize goals or objectives, we chose to prioritize the additional requests for resources in the Implementation Section of the CCP. As these projects are funded, additional emphasis will be placed on the project objectives and strategies.

Input Distribution of vegetative heights should include adjacent private lands in the Prairie Focus Area Objective (Refuge Tallgrass Prairie Management Approach Section). ***Response*** The Complex staff does not have management responsibilities or control adjacent private lands. Their management varies from year-to-year and were not considered.

Input Maintain some of the existing DNC fields rather than converting all to native plant species. Use farming to manage DNC. ***Response*** The CCP includes a section on maintaining existing DNC (Introduced/Planted Cover - Dense Nesting Cover Section) on both the Refuge and District recognizing the importance of this habitat type to ground nesting birds, especially waterfowl. The Final CCP was modified to include farming as a tool to manage of DNC.

Input A plan to increase independent operation of managed wetlands should be developed. ***Response*** While a flow through system of water management does make it more difficult to manage pools independently, installing a pumping system and the cost of operation and maintenance at this time would be cost prohibitive. Topography also plays a role in the feasibility of such a system.

Input If a five year cycle of manipulation is used, the objective on pool management may over-emphasize dry pools and under-emphasize very shallow water and mudflats. ***Response*** The managed wetland objective provides a variety of water depths for the Refuge pools. This includes dry, shallow, mid-depth, and deep water as well as 20 percent to manage for what is missing in the system. Though the narrative for this section does not elaborate, many of the pools that are in various stages of drawdown will have mudflat areas, shallow water areas, and mid- and deep-water areas. When evaluating the objective, a wetland may be classified as mid-depth, but it will likely have areas that meet all of the objective depths. The objective's purpose is to mimic natural wet and dry cycles and was written as a quantifiable goal that can be can be monitored and evaluated. Wetlands are not necessarily on a five year cycle; they may spend several years at any one stage depending on area weather conditions.

Input Include strategies on reduction of nitrates and sediments, construct filtration marshes, and place buffers around non-managed Refuge wetlands. ***Response*** The water quality objective assumes that nitrates and sedimentation are problems, but the first strategy discusses the need to determine what the water quality problems are before determining what actions to take. The remaining strategies reflect the fact that the best opportunities to improve water quality are likely to occur off-Refuge in the watershed and that it is likely that the Service will only be part of any watershed quality effort rather than the initiating agency. One of the strategies listed under the Water Quality Objective included the restoration of wetlands to improve the water quality. Vegetative buffers around non-managed Refuge wetlands are discussed under the Refuge Non-managed Wetlands Section and the strategy to, "Implement management methods to reduce or eliminate threats to wetland productivity and function" would include buffers around wetlands.

Input Accounting of CRP retirement schedules may afford opportunities to plan replacement nesting cover in key areas where CRP acreage is expected to be reconverted to cropland (possibly fee title). ***Response*** The Complex staff does monitor the CRP contracts in conjunction with private land activities. The political and social climate is not conducive to acquiring high wetland density CRP tracts that may be brought back into agricultural production. While the presence of adjacent CRP fields may afford the staff an opportunity to consider rejuvenating cover on adjacent Service lands, these decisions are primarily driven by willing cooperators since neighboring farmers do most of this work.

Input The 135 acres of cropland on the Refuge seems insufficient. Human influences off the Refuge long ago eliminated any opportunity to passively manage the system as a pristine unaltered environment. Farming must remain a tool available to refuge managers, and it must be aggressively and effectively utilized. ***Response*** Staff observations of wildlife Refuge crop use indicates that during a difficult winter sufficient food is provided by the current 135 acre Refuge share. During milder winters, surplus corn has occurred in the Refuge share fields. Refuge wildlife populations also use food plots on the adjacent ND Game and Fish Department lands. The CCP describes the intent of managers to continue to utilize farming as a management tool for grassland rejuvenation and wildlife food.

Input Departures from State hunting regulations should be made only when there is a body of supporting data relevant to specified management needs of the refuge. ***Response*** The few departures from State hunting regulations deal with herd management, Federal regulations (use of non-toxic shot for upland game birds), and public use management on the Refuge. The purpose of the Refuge, Refuge resources, recreational programs, public demand, State management goals, and the safety are all considered when evaluating hunting, fishing, and trapping opportunities.

Input Consider another strategy involving contract, or no-fee, rough fish removal (carp) in relatively small waters that lack complete water level control as it may prove to be cost effective. ***Response*** Currently, commercial interest in Refuge carp is limited. Fish located in other lakes are easier to harvest. We contact commercial harvesters occasionally to see if they are interested.

Input Refraining from carrying out additional management activities for nonnative species to the detriment of native species may imply intent to avoid management activities that benefit pheasants and are neutral to other species. ***Response*** This section has been modified in the Final CCP to make it clearer to the reader that the intent is to refrain from conducting activities to benefit nonnative species that would negatively effect the native species.

Input The closure of the Refuge during October is appropriate, but should not unnecessarily limit recreation access, including hunting and trapping, especially where recreational opportunities can be provided without the use of vehicles, and without negative impacts to focus species. ***Response*** Closure strategies are designed to balance migratory bird and recreational use. Migratory bird use, a primary Refuge purpose, must be considered first under the National Wildlife Refuge Administration Act and the National Wildlife Refuge Improvement Act. Some recreational opportunities are available, but hunting seasons in October would produce a steady level of disturbance that would affect migratory bird use.

Input Exceptions for access of areas normally closed to the public should be based on an equitable system that utilizes written permits for enforceability and potential monitoring. ***Response*** The exceptions for access would be evaluated to determine if the use is beneficial (research or educational) or will have minimal wildlife impacts. Permits would be issued for exceptions if the visitors are not accompanied by staff. Examples of some of these possible exceptions include school group visits, research, and special events.

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Input Hunting Section states that "Waterfowl and other migratory bird hunting is contrary to Refuge purposes as an 'inviolate sanctuary for migratory birds." While the function of a waterfowl refuge certainly requires some area of undisturbed sanctuary, at least seasonally, this sentence overstates the need to restrict hunting in a refuge climate. ***Response*** Policy requires that no more than 40 percent of an inviolate sanctuary refuge may be opened for waterfowl hunting. A compatibly determination must be completed prior to opening the Refuge to any hunting. Due to the availability of hunting on adjacent public lands and private lands, opening the Refuge to waterfowl hunting was considered, but not adopted as part of the hunting objective. The Final CCP Refuge Hunting Section has been modified to provide additional information and clarification.

Input The reason for restricting of opening pheasant season to after the close of deer gun season is not stated. If this restriction is due to safety considerations it is unnecessary if pheasant hunters wear blaze orange. ***Response*** The reason for late opening of pheasant season is to avoid hunter conflicts and excessive wildlife disturbance which includes migrating waterfowl in October and movement of deer by pheasant hunters. Safety for deer and pheasant hunters is also a consideration since Refuge hunter concentrations are much higher than other areas. The density of pheasant hunters that would be expected during the deer season would likely reduce deer hunter success resulting in a harvest below herd management goals. Pheasant hunting on the Refuge is a popular pastime that draws a large number of hunters from the city of Fargo and surrounding areas in North Dakota and Minnesota.

Input Should plan for at least one full-time and part-time interpreters. ***Response*** A request has been submitted for additional staff and funding to implement the interpretation and environmental education objectives and strategies. (see Implementation and Monitoring Section).

Input Public Outreach Section would benefit from inclusion of components that recognize needs and opportunities to contact agricultural organizations and local farmers and ranchers regarding refuge issues. ***Response*** Refuge staff currently visit with agricultural producers and groups especially involving management of Refuge crops, haying and grazing, and private lands programs. Additional discussion about working with these groups and continuing those relationships is available in the Habitat Management and Partners Sections.

Input The Cultural Resource Section would be strengthened by relating all of the cultural resources and interpretation thereof to either impacts on or influences of wildlife resources. ***Response*** Discussion of this relationship in the CCP can be found in the Historical Resources, Cultural Values, and Uses Section and the Land Use and Wildlife Species Changes Section. Cultural wildlife relationships will be taken into consideration on any new interpretation efforts.

Input The volunteer program should include a volunteer management plan and documents (job descriptions, training requirements, recognition, etc.) which may be obtained through and adopted from existing volunteer management programs. ***Response*** These suggestions will be fully implemented as funding and staff become available and the program grows. The Complex staff goal is to provide a quality experience for all volunteers. Administration of the volunteer program at this level of detail is beyond the scope of the CCP considering the Refuge volunteer participation is usually for short duration, single events. The staff does discuss job responsibilities, provides training, and rewards volunteers.

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Input We support the objectives for elimination of nonnative plants and cropland to native prairie conversion, but the scientific support is unclear for the distribution of varying vegetative structure heights. ***Response*** Varying vegetative heights are required for the selected indicator species to provide habitat for these declining migratory grassland birds. A Habitat Based Approach to Management of Tallgrass Prairies at the Tewaukon National Wildlife Refuge by Schroeder, R.L. and K.L. Askerooth supports this objective (see literature cited and Refuge Tallgrass Prairie Management Approach Section).

Input The Monitoring and Evaluation Section would benefit from the inclusion of components that provide for study of human use, recreational demands, and other human dimension aspects of the Refuge. ***Response*** This section will be further defined in a step-down plan. Plans are to include monitoring and evaluation of wildlife and human impacts/ interactions.

ND Office of the State Engineer

Input In the proposed water level management there should be recognition of State and local water management interests, laws and needs. Impacts of water management changes should be distinctly defined in the CCP. ***Response*** During yearly planning for water level management, impacts to State and local water interests are taken into account as well as laws and needs. Water releases are timed to have the least impact to downstream, adjacent, and upstream landowners. Staff will continue to work to resolve any problems that come up and ensure holding water does not impact adjacent landowners. Local water board meetings are attended and management plans are yearly sent to ND Office of the State Engineer. Detailed water management information will be discussed in the step-down Water Management Plan as this information is more detailed than the scope of the CCP.

Input Concerns that the protection of an additional 60,900 acres within the District with grassland and wetland easements will have a definite impact on local and state water management efforts and should be defined in the CCP and Environmental Assessment. ***Response*** The CCP describes broad habitat protection objectives. At this time, it is impossible to identify where easement and fee title acquisition will take place since this effort is driven by landowners interest. Each property would have to be evaluated on a case-by-case basis to determine if possible impacts may occur to water management. While a formal process is in place to discuss fee title transactions, this is not the case for easements or cooperative agreements. State and local water management personnel need to keep the Complex staff informed about water management projects that may impact Service interests. Counties have maps that show Service tracts which are periodically updated. We encourage County Commissioners and Water Management Boards to contact us early in their project planning process so we can discuss the potential for impacts to Service resources. We also initiate these contacts if we become aware of any project discussion that may impact Service interests.

Delta Waterfowl Foundation

Input Concerns on inflammatory statements on predator control. ***Response*** While the wording may be considered inflammatory, it is true. Predator control is conducted in the spring because research shows it is effective and because waterfowl and other ground nesting birds are being severely impacted by furbearers that are hunting for their young.

Input Waterfowl nesting reference does not give information on the current distribution or population status of these predators is not what historically existed. ***Response*** This information is discussed in the Land Use and Wildlife Species Changes Section. We referred readers to this section in the Final CCP Waterfowl Nesting Section for additional information.

Input Waterfowl Nesting Objective is too restrictive (approximately two to three weeks) for a management tool that may need to be used under less specific terms. For example when this amount of effort is insufficient to control a large number of predators prior to the nesting season. ***Response*** Staff felt that this approximate duration of trapping was sufficient to improve nesting success and provide flexibility. The time period could be modified if it is found to be insufficient.

Input Would emphasize that the purpose for the Refuge relates to migratory bird production. ***Response*** The Refuge was established as "a refuge and breeding ground for migratory birds and other wildlife." This includes meeting migratory bird production and migration life needs during the time they utilize the area.

ND Chapter of The Wildlife Society

Input Support for the following items in the Draft CCP: restoration of old DNC fields to more diverse native plant communities, water management strategy for Refuge impoundments, continued maintenance of recreational fishing program on Lake Tewaukon and Sprague Lake, continued Refuge hunting program for white-tailed deer and ring-necked pheasants, maintenance of 135 acres of cropland for migratory waterfowl and wintering wildlife, maintenance of native woodland habitat, and the enhancement of native prairie grasslands and other grassland habitats without the introduction of tree plantings.

North Dakota Game and Fish Department

Input Fish are not recognized in the Draft Plan, need to be included. Better definition of recreational fishing. ***Response*** New sections were written to address fish populations on the Refuge and District. The Public Use and Recreation Fishing, Wildlife Disturbance, and Partners Sections discuss the role and importance of Refuge recreational fisheries.

Input Refuge fisheries are important to the local area due to lack of other resources. Allowing fishing until sunset in the winter and boating access until after dark in the summer (11 pm) would enhance local fishing opportunities. ***Response*** The Draft CCP recognizes the importance of Refuge recreational fisheries in the local area. Fishing is allowed from one-half hour before sunset until 10:00 pm, approximately five hours after sunset during the winter. The CCP does not address fishing access hours, but this period has been posted in public use guides for the past 10 years, and no plans are in place to change it. While staff recognizes that having later fishing hours in the summer would increase local fishing opportunities and may be compatible with Refuge purposes, consideration must be given to the ability of staff to manage the recreation. At this time, sufficient staff is not available to extend the fishing hours.

Input Specify boat launching sites in the plan and winter angler access. ***Response*** Boat ramps were identified on the Refuge maps included in the Draft CCP. Winter angling access points are discussed in the Public Use and Recreation Fishing and Wildlife Disturbance Sections in the Final CCP.

Input Stocking of yellow perch particularly during high water levels, would also enhance recreational fishing opportunities. ***Response*** Yellow perch are being stocked in Lake Tewaukon and Sprague Lake. Most recent releases in 1998 included 63,000 perch fry in Lake Tewaukon and 15,000 perch fry in Sprague Lake; 1999 included 50,000 perch fry in Lake Tewaukon. Fish will be stocked according to Missouri River Fish and Wildlife Assistance Office recommendations based on their sampling and management plan.

Input The structural classification is incomplete on the six prairie focus areas (only 60 percent accounted for) and rational and methodology for measuring the desired structure is also missing. Has the potential structure of the climax communities been identified? ***Response*** The Tallgrass Prairie Management Approach Section objective in the Final CCP was modified to include all structure categories. Rational for the structure is included in the text (see reference Schroeder and Askerooth 2000). Methodology for the monitoring will be more specific in the step-down plan. A list of climax tallgrass communities is listed in the Refuge Grasslands - Native Prairie Section.

U.S. Forest Service

Brian Stotts, manager of the Sheyenne National Grasslands U.S. Forest Service came in to discuss his questions and concerns on the Draft CCP. The following topics were discussed:

Input Acreage figures for remaining tallgrass prairie are lower than the HAPET information used. ***Response*** At this time, this is the best Service data available for identifying remaining tallgrass prairie. Some professional debate may occur about the accuracy of this information. A review of the Draft CCP showed that the percentages of remaining tallgrass in some sections of the Plan were inaccurate and they were modified to agree through out the Final CCP. Remaining tallgrass prairie in North Dakota is estimated to be 1 percent in the Final CCP.

Input More emphasis should be placed on the possible rare plants on the District. The Sheyenne National Grasslands has 40 species and there should be possibilities of these existing on Service lands. ***Response*** The Draft CCP recognizes that the Service has an information gap regarding the presence of rare plant species on Service lands. The Final CCP identifies the need to survey prairie tracts for rare plant species (see second objective under ND State Listed Rare and Unique Species Section for further information).

Input Would like to see the Complex work towards replanting of natives, especially rare plants so that all the eggs are not in one basket. Use local seed sources. ***Response*** The Complex CCP describes management strategies that will preserve the plant diversity on native prairie sites and strategies for converting some grassland tracts to a diverse native floral community (See Native Prairie and Planted Cover Sections). Local seed sources will be used when available, including those that may be available from private landowners. If sites are appropriate and sources are available, rare plants could be utilized to enhance plant diversity.

Input How are the priorities set for land acquisition. Is duck nesting habitat more important than orchid habitat when easements are being considered? ***Response*** The Complex staff has a responsibility to manage the Complex for the primary purpose of migratory bird management. However, staff also have responsibilities to trust species including endangered species. Both waterfowl and orchid values and other values such as tract size and location are considered when easement tracts are evaluated. Generally, tracts with high evaluation scores contain habitat for both species and are not mutually exclusive.

Input Grassland easements should have more rights for protecting endangered species like prairie fringed orchids (mow areas after September 15 - not July 15 to preserve seed source) and management of grasslands for improving the species diversity. ***Response*** Easement documents have been standardized for legal reasons. In addition, easements are structured to keep grasslands from being converted to farmland and maintain grassland cover through the nesting season in a manner that is compatible with cattle operations. Management of easement grasslands could also be accomplished through agreements with the landowners to protect orchid seed source by delayed mowing, grazing, etc.

Input Why is specific orchid management required in the Forest Service Management Plan and not in included in the Draft CCP. ***Response*** Currently, no orchid populations occur on Service fee title lands. A specific objective is listed for orchid habitat protection and enhancement on private lands in the CCP. The Final CCP includes a Section 7 Consultation which provides additional discussion on orchid habitat protection and management opportunities.

Local Group Input
The following local groups requested that Refuge staff meet with them during the second open input period to answer their questions about the CCP and to accept their comments. Below are the comments that the staff recorded.

Three topics of discussion were common to all of the groups and are addressed below:

Point Road Access - Concerns were raised about restricting access to the Point Road from October 1 to April 30. Most individuals did not agree that this form of public use would significantly disturb the resting waterfowl during migrations in the spring and fall. This area is a popular place for shore fishing. Suggestions included not setting a specific date but closing the road only during deer season and when the road was impassable either from snow or during wet spring conditions. ***Response*** The strategy in the Final CCP has been modified. The Point Road will be closed to all public access if it becomes impassable due to snow conditions or on November 1 to limit winter wildlife disturbance and for ice fishing safety. This will be evaluated and monitored for several years to determine the scope and degree of wildlife disturbance. The Point Road may then be closed from October through April if migratory bird disturbance is determined to be significant.

Tree Removal - During the first comment period, many rumors were going around in the local community that the Draft CCP described removing all trees. Sentiments of the public include the need to maintain the tree belts for wintering deer and pheasants. Also, some mentioned that any tree removed should be replaced with a tree elsewhere. ***Response*** A lengthy discussion on the Tallgrass Prairie Management Approach is in the CCP. The CCP does provide for tree removal in specified prairie grassland focus areas. These focus areas were selected due to the presence of existing native prairie and very few trees. The majority of tree removal will include individual trees, mostly Russian Olive. Only one tree belt on the Refuge (north Pool 2) may be removed after monitoring and more on-site evaluation is done; this constitutes less than 1 percent of the trees on the Refuge. Some tree belts on the Gunness WPA and the Gainor WPA are at the fringes of the grasslands and at this time, no plans exist to remove them. Several tree belts and individual trees exist on the Hartleben WPA. Initially, an area of 160 acres or greater will be selected and only trees from this area will be removed at this time. The remaining tree belts on the Refuge and District would still provide adequate habitat for deer, pheasants, great horned owls, red-tailed hawks, and other wildlife. Further tree removal on the Hartleben WPA will be considered after monitoring and evaluation. The Final CCP does not call for planting any new trees on the Complex.

Pheasant Management - Pheasant hunting and observation are a favorite past time for local residents. They enjoy seeing pheasants and hunting them. Many questions came up on whether we were trying to totally remove pheasants from the Refuge. ***Response*** The second objective in the Refuge and District Wildlife Nonnative Section applies to nonnative species such as the ring-necked pheasant. The objective states that management activities conducted specifically for pheasants to the detriment of native species will not be done. Management activities that benefit native species and also benefit pheasants will be done. Removal of pheasants and partridge are not a CCP objective.

Cogswell Gun Club

Input Prioritize what species of nonnative plants you intend to control first (i.e. spurge, thistle, bluegrass). ***Response*** A new section on Nonnative Plant Management was developed to provide more information. The control of leafy spurge, Canada, musk, and bull thistle will continue to be Complex priorities. A combination of biological, mechanical, and chemical control methods will continue to be used on these four species. Currently, staff and funding are not available to include an integrated management of the other nonnative plant species, i.e., Kentucky bluegrass and smooth brome. Prescribed burning and limited grazing are currently the only tools used on these species because they are relatively inexpensive and involve less staff time.

Input The Refuge and District need to provide fishing and hunting access for the public. ***Response*** Hunting and fishing access were considered in the CCP (see Refuge Public Use Section and District Public Use Section) and several objectives were designed to continue and enhance these programs.

Input The Service needs to take measures to resolve the Canada goose damage to farmers crops. ***Response*** The Service is working with the North Dakota Game and Fish Department, the U.S. Department of Agriculture's Animal Plant and Health Inspection Service, and local landowners to try to resolve this issue. An early Canada goose hunt was initiated in 1999 and expanded in 2000 to work on decreasing the number of resident Canada geese.

Input What is the cost of providing for butterfly habitat and is this realistic. ***Response*** Rare prairie butterflies use primarily native prairie tracts. Managing for these species involves managing the plants on these sites. A variety of tools can be used to enhance the plant diversity on the sites including haying, burning, and nonnative plant control. Haying, by cooperators, and burning are relatively inexpensive methods. Nonnative plant control can be more expensive but biological control (insects) is most often used on these sensitive sites. The presence of butterflies indicates that plant communities are healthy and diverse. Grassland management goals are developed to provide habitat for all grassland species. Grasslands that support butterflies support a broad diversity of migratory birds and other wildlife.

Lake Region Wildlife Club

Input No deer hunting on the Refuge (individual comment). ***Response*** Deer hunting will continue to be utilized as a management tool to manage populations to limit habitat damage and ensure the health of the Refuge deer population.

Input Pheasant season open after South Dakota Deer opener so that Refuge deer are not run off and shot by SD residents. ***Response*** Pheasant season opener will continue to be held after the close of the ND deer gun season. The size of the Refuge wintering deer population does not indicate that Refuge deer are pushed to South Dakota during the pheasant season.

Red River Area Sportsmen

Input More emphasis on spring predator trapping on the District. Only ranked 12th on the funding projects yet it is cost effective and gets results. Minor amount of money when you look at the other more costly projects. ***Response*** The Tewaukon Complex has many priorities which must be balanced with funding and staffing. Spring predator trapping is still a priority on the District and was discussed in the District Waterfowl Section. In the strategy, it indicates that staff will work with partners to accomplish this when funding through the Fish and Wildlife Service is not available.

Input Provide more opportunities and projects for volunteers especially young people. Devote more time and effort to providing projects for volunteers that are meaningful and would provide good experiences for the Refuge and volunteers. ***Response*** The CCP recognizes the importance of volunteers of all ages. The Refuge Volunteer Section provides an objective to address these needs for the Complex and will be fully implemented as funding and staff become available. The Complex staff goal is to provide a quality experience for all volunteers.

Rutland Sportsmens Club

Input Close the Point for weather related problems only. ***Response*** Weather related conditions will be considered when closing the Point Road (see above discussion).

Input Mow roadsides beginning in June, once per month, two swaths wide to prevent deer/car accidents. ***Response*** The purpose for the Refuge is for migratory birds, and these birds utilize the grass habitat along the roadsides so no roadside mowing will be done prior to July 15. The Refuge will abide by North Dakota roadside regulations and ensure mowing of roadsides by October 1.

Input Conduct recreational fall trapping on a non-bid system (no charge to the trapper). ***Response*** Current demand for trapping is not sufficient to justify continuing this program. If fur prices increase and along with that the demand increases, the program will be reevaluated.

Input Do not reduce the current farming acreage of 500 acres on the Refuge. ***Response*** Plans are to continue the current farming program at 500 acres which includes the cooperator share.

Input Clarify what you mean by nonnatives (section on Carp). Does it include pheasants. ***Response*** The Nonnative Section in the Final CCP has been modified to clarify the different types of nonnative wildlife. Pheasants, which come from China, are a nonnative species but unlike carp do not compete directly with native species for resources. No management will be done to specifically manage for pheasants if it is to the detriment of native species. Pheasants do benefit from other habitat management on the Complex done for other species (i.e. predator control).

Input Have all night fishing. ***Response*** See response under Fishing in the Scoping Input and Response Section.

Sargent County Weed Board

Input Restricting the Point Road access for the public is not popular. ***Response*** See previous paragraph on the Point Road Access.

Input Maintain Crop acreage (would reduce weed problem). ***Response*** Plans are to continue the current farming program at 500 acres which includes the cooperator share (135 acres as Refuge share). Farming will also be used as a tool in the reestablishment of grassland habitat. See Refuge Wildlife Waterfowl Planted Foods and Refuge Habitat Management Grasslands Sections.

Input Weed management is important especially with existing thistle problems. ***Response*** The staff recognizes the growing problem with Canada thistle invasions. A combination of control methods including chemical, mechanical, and biological will continue to be used in an integrated approach to the problem. We encourage the Board to refer Complex weed complaints to us. See Refuge Nonnative Plant Management Section for more information.

Individual Comments

Individual comments which were discussed at the open house (on July 28), by other individuals or have not previously been discussed follow:

Input Would this CCP supercede the 1962 Master Plan. Concern that Master Plan focused more on waterfowl where other migratory bird species should also be considered. ***Response*** The CCP will supercede the 1962 Master Plan and provide direction on Complex management, activities, and programs for the next 15 years. The CCP includes a wide variety of goals and objectives that cover a wide spectrum of migratory birds, including waterfowl, and other wildlife. Several habitat objectives were developed to focus more attention on grassland migratory birds.

Input How will you monitor your indicator migratory bird species when other factors come into play on their numbers. ***Response*** In this CCP, habitat monitoring receives the primary emphasis because migratory birds are impacted by a variety of factors on their wintering and nesting grounds and all along their migration pathways. Managers will continue to review current research and monitor the critical habitat needs of wildlife species. Monitoring migratory bird use over a long period of time can still provide some general local population trend and habitat use information. Monitoring specifics will be addressed in a Monitoring step-down plan.

Input What is the difference between the two water quality objectives in the Refuge Section. ***Response*** The first objective deals with managed Refuge wetlands and the second objective is specific to wetlands that are not managed.

Input In the Refuge Migratory Bird - Shorebird Section when you refer to 37 shorebirds and 28 sandpipers; are the sandpipers part of the shorebird number? ***Response*** Yes, sandpipers are part of the shorebird number. The text has been modified to reflect this.

Input Concern about the management of nonnative species particularly the ring-necked pheasant and gray partridge. CCP indicates removal of nonnative wildlife. ***Response*** Refer back to the Pheasant Management discussion in the Local Group Section.

Input The Point Road should not be closed for a longer period of time. Wildlife disturbance on the Point is crap. ***Response*** Refer back to the Point Road Access discussion in the Local Group Section.

Input Under the Refuge and District Tallgrass Prairie Management Approach Section it stipulates that tracks must be 50 meters from woody vegetation, and no woody vegetation taller than 1 meter. Does this mean planted shelterbelts at these sites will be killed/removed? What about removal of trees in sandy soils which could contribute to wind erosion? Do they have to be to get your 160 acres? Some of these areas have trees on or near the edge. Could you not move 50 meters away for your study areas? ***Response*** A lengthy discussion on the Tallgrass Prairie Management Approach is in the CCP. Refer back to the Tree Removal discussion in the Local Group Section. Great care will be take to remove trees in such a way to minimize the soil erosion especially on sandier soils.

Input In the Refuge Nonnative Wildlife Section, the objective states that you will do nothing to help pheasants and partridge that hurts native birds. Does this mean removing trees, shelterbelts? Also will you continue millet bales? ***Response*** Currently, the only tree removal on the Refuge that might be done will be in the prairie focus areas as discussed previously. Millet bales benefit deer and other birds and will continue to be placed on the Refuge winter wildlife food.

Input In the Wildlife Disturbance Section, the research indicates that the least disturbance to waterfowl is from shore fishing and traffic. Providing these activities around Lake Tewaukon causes very little disturbance. If traffic is so disturbing - why do so many ducks and pheasants nest in road ditches - even on the refuge? The Refuge does not mow road ditches for hay until after July 15 just to avoid the nests. ***Response*** Shore fishing and shoreline traffic cause less disturbance than jet skiing and power boating but that does not mean that they do not cause disturbance. Birds will be disturbed (flush and move) in response to shore fishing and traffic. The staff recognizes that shore fishing and wildlife observation are popular activities. We must consider this is a Refuge for migratory birds and that wildlife comes first. Traffic is allowed around Lake Tewaukon during the duck nesting season. While some birds nest in road ditches, the majority of the birds are widely disbursed throughout Refuge grasslands. Wildlife select nesting areas based on various habitat components. Waiting until after July 15 to mow road ditches increases the potential for nests in road ditches to hatch successfully.

Input Use of references from Germany and England are not relevant in the Refuge Disturbance Section without more information such as how many anglers, did the wildlife have anywhere else to go, how big was the area studied, etc. ***Response*** These references are examples of wildlife disturbance used to base management objectives. Another study, conducted in Wisconsin on a refuge, on recreational disturbance (shore anglers) to waterfowl was added to the Final CCP. Staff also rely on observations made here at the Refuge and from discussion with other staff at other refuges. As part of the CCP, a need for more monitoring has been identified on wildlife disturbance and Refuge recreational programs.

Input Strongly oppose the use of herbicides and pesticides. ***Response*** The Complex uses an integrated management approach to control nonnative plant species including biological and mechanical methods in addition to herbicides. Due to the aggressive nature of many of these nonnative species, a combination of these methods (Integrated Pest Management) is usually the most effective. Herbicides used on the Complex must go through a review process before they can be used. Only chemicals that are the least toxic to wildlife are used. Currently, no pesticides (insecticides) are being used on the Complex. See Refuge Nonnative Plant Management Section.

Input Urge the reintroduction of river otter and other extirpated species. ***Response*** The CCP calls for the preservation and restoration of endangered, threatened, and unique native flora and fauna that occur or have historically occurred on the Complex. Each species considered for reintroduction would have to be reviewed to assure that the Refuge or WPA has both the quantity and the quality of habitat to support that species. River otters have been recorded historically in the Red River of the North. Historically, the Wild Rice River provided only marginal river otter habitat with its intermittent water flows and small size. The Wild Rice River through the Refuge does not provide good otter habitat because it is a series of managed wetlands with little stream habitat. No river otter habitat occurs on the District on Service lands.

Input Include hiking trails, interpretive trails, expanded visitor center hours, and a paved auto tour route. ***Response*** Trails and expanded visitor center hours were included in the Draft CCP under the Refuge Wildlife Observation and Photography and the Interpretation Section. Paving the auto tour route was not considered due to the current amount of traffic and visitor use and anticipated construction and maintenance costs.

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Input Disappointed in the lack of birding opportunities in spring and summer. Would like to see more interpretation on WPAs and other public use. ***Response*** The Refuge Wildlife Observation and Photography Section discusses the opportunities available to the public. An overlook exists on the south shore of Lake Tewaukon for viewing waterfowl migrations as well as the North Boat Ramp and the East Boat Ramp Areas which are open year-round. The Refuge Wildlife Disturbance Section discusses the purpose of area closures and a strategy specifies that exemptions for public access will be evaluated on a case-by-case basis. The CCP also has strategies to develop an observational platform and hiking trail on the Refuge. An interpretive trail is located on the Hartleben WPA near Hankinson. The CCP also identifies a need for more interpretation on WPAs. As the demand for these activities increases, staff will reevaluate the current opportunities with Complex purposes and possibly develop additional opportunities.

Input Do not agree with the cooperative farming where 500 acres are planted for a benefit of only 135 acres. Find other alternatives such as hiring a local farmer to plant food plots or hire local sportsmens clubs. ***Response*** In the Refuge Planted Foods Section the strategy includes the flexibility to hire a local farmer to plant 135 acres for wildlife if adequate and consistent funding are provided. This approach would eliminate the need to farm the additional acres. Current funding is not adequate for this option to be utilized. The District has four WPAs that have been adopted by local sportsmens clubs which plant and manage food plots. Funding is not adequate at this time to hire the clubs to plant food plots.

Input How come gray partridge are not included in the hunting season when pheasant hunting is permitted? ***Response*** Staff observations of gray partridge show an insufficient number to hunt on the Refuge (low population numbers and only occasional sightings). If gray partridge numbers increase to a huntable population this opportunity would be reevaluated.

Input There is no mention of the Refuge using the Americorps Program for volunteers. ***Response*** Currently, Refuge housing and staff to administer the program is limited for volunteers. To provide a quality experience for volunteers and the resource, additional staff and funding is needed. The variety of sources mentioned in the first volunteer strategy in the Refuge Volunteer Program Section would include the Americorps Program.

Input A single WPA or part of the Refuge should be singled out for high intensive management utilizing intensive short-term grazing, controlled burns, mowing and haying to reduce the amount of undesirable plant species and communities. ***Response*** The CCP utilized all of these management tools and singled out priority WPAs and Refuge Prairie Focus Areas for a more intensive management approach (see Refuge Grassland Management Section, District Grassland Management Section and Refuge Nonnative Plant Management Section).

Input Raise more soybeans to keep Canada geese on Refuge and off private land. ***Response*** Currently, some soybeans are grown in the Refuge crop fields as the cooperators share. Geese, however, are flexible feeders and tend to distribute themselves on the landscape due to water availability. Growing crops on the Refuge is unlikely to lure geese away from private croplands. Increasing the amount of Refuge cropland is likely to add more geese to the area population and increase crop damage.

Input Would like the Refuge to be more involved in the flooding issues in the Wild Rice River Watershed both in watershed management, water quality, and flooding. ***Response*** For discussion, see the response to the ND Office of the State Engineer in the National, Regional, and State Group Input Section.

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Input Continue to reduce carp in the lake and decrease the number of bullheads. ***Response*** Refuge staff are working to control carp (see previous Public Scoping Input and Responses under Fishing for further information). Bullhead populations are cyclic, when populations are high they compete with game fish for resources. Removing bullheads is costly and inefficient considering that populations will decrease naturally.

Input Clean out trees by boat ramps and dock on east side of Lake Tewaukon for better access for shore fishing. Remove some trees on the east boat ramp to improve vehicle/boat access to the ramp (corners too tight) and to provide for improved shoreline fishing. ***Response*** Refuge staff will review and look at these areas. Trees in this area provide shade and some wind protection for visitors.

Input Have three to four 50 foot walk-out docks for fishing on the north and south sides of Lake Tewaukon. More shore fishing access; level off some of the sharp embankments on the north side of Lake Tewaukon. ***Response*** In order to expand the recreation fishing access in this way would require costly sloping of the Lake bank which would require a lower water level in Lake Tewaukon to maintain the banks. This in turn would reduce fish survivability in the lake.

Input Maintain alfalfa in fields. ***Response*** Alfalfa will be maintained in the DNC fields (see Refuge Introduced/Planted Cover Section and the District Introduced/Planted Cover Section) and in our crop rotations on the Refuge.

Input Would like a walk-thru gate for fishing access to Wahl Lake through the Boehning WPA in Richland County. ***Response*** Complex staff will review the site to determine the feasibility of this request.

Input Would like steps on the north side boat ramps on Lake Tewaukon. ***Response*** Anglers are able to access the Lake through the north side boat ramps which are less steep than this bank. Keeping steps ice and snow free during winter conditions would be very difficult. Winter access is likely to be better if the staff concentrates on maintaining the boat ramp area.

Input Concerned about the fishery with current low water levels (during construction projects). ***Response*** Lake levels were lowered approximately one and one-half feet to accommodate the construction of two areas damaged during flooding in 1997 and 1998. Water management plans included storing water upstream to add to the Lake after construction and prior to freeze up to ensure fish survival. A one foot drop occurs naturally during dry summers from evaporation and has had no detrimental effect on the fishery.

Input Would like the Service to purchase land to the south of the Refuge to provide for more hunting access. ***Response*** The Service is always open to opportunities for land purchase, especially adjacent to the Refuge. The landowners would have to approach the Service first and the purchase would require a County Commissioner recommendation and approval from the North Dakota Governor.

Input Don't think there should be hunting of pheasants past November. ***Response*** See the Scoping Input and Responses under the Hunting section.

Input Too many beaver, they need to be trapped out. Hire someone to trap. ***Response*** The Refuge currently has a small population of beaver that are not a concern. If a problem develops, staff can deal with problem beaver on case-by-case basis.

Input Concerned about loss of fish from the lake both downstream and upstream (especially upstream where they cannot fish). ***Response*** Lake Tewaukon currently has a good fishery. While some fish may migrate upstream or downstream, good populations of fish exist especially with yearly stocking of the lake. The four large dams on the Refuge limit fish movement upstream.

Input Would like continued and additional emphasis on environmental education. More field trips and after school events. ***Response*** The objective and strategies listed under the Refuge Environmental Education Section provide for additional environmental education activities. Tewaukon Complex staff would also like see additional environmental education activities. More will be considered as staff and funding become available.

Input Goose problems need to be solved - include in plan working through the system to reduce numbers, pay farmers for losses or other options. ***Response*** Canada goose problems are occurring nationwide, and the Fish and Wildlife Service is working with the North Dakota Game and Fish Department, USDA Animal Plant Health and Inspection Services, and local landowners to try to resolve this issue. Currently, no program or enough funding is available in North Dakota to compensate farmers for crop losses caused by Canada geese. The ND Game and Fish Department has established an early Canada goose season to control the resident populations of geese. If this does not work, other options will need to be explored.

Input Request a food plot on the Hartleben WPA (20 to 30 accessible acres). ***Response*** Currently the Hartleben WPA is being intensively managed for the existing native tallgrass prairie (of which only 1 percent remains in the State) and introduced grasslands are being restored to diverse native plantings. A local sportsmens group was contacted and were not interested in maintaining a food plot when this WPA was acquired.

Input Artificially feed deer corn in hard winters. ***Response*** The Refuge has 135 acres of cropland that is planted to a variety of wildlife foods including corn. Additional corn fields are maintained on the adjacent State Wildlife Management Area. This has proven to be adequate for the number of deer on the Refuge. Even in a record winter (1997) much of the corn that was available and useable in these fields was not used up. Staff documented deer use in these fields and noted that grain was still left after the hard winter. Artificially feeding deer is time consuming, expensive, and would not be an efficient means to provide winter food. Concentrating large numbers of deer can increase the risk of disease.

Input Drain all temporary wetlands on private land into one large wetland with permanent tree belts around wetlands to protect the cattails from filling up with snow. ***Response*** Large wetlands do not provide the spring invertebrate production found in small temporary and seasonal wetlands required by migratory waterfowl and shorebirds. Smaller wetlands are vital for spring waterfowl pairing. North Dakota produces over half of all ducks in the lower 48 states because of these small wetlands.

Input Private landowners should be listed as partners. ***Response*** The Final CCP was modified to include private landowners as partners in the management of wildlife.

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U. S. Fish and Wildlife Service
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For Refuge Information
1 800/344 WILD

September 2000

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Wild Prairie Lily with Porcupine Grass, Herbert Troester, USFWS

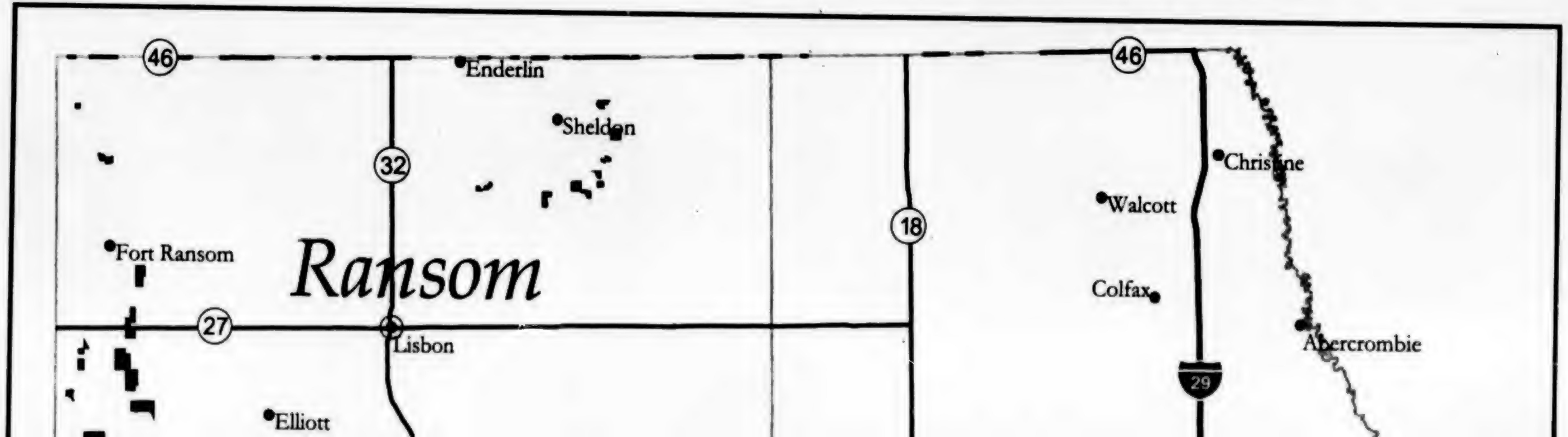
END

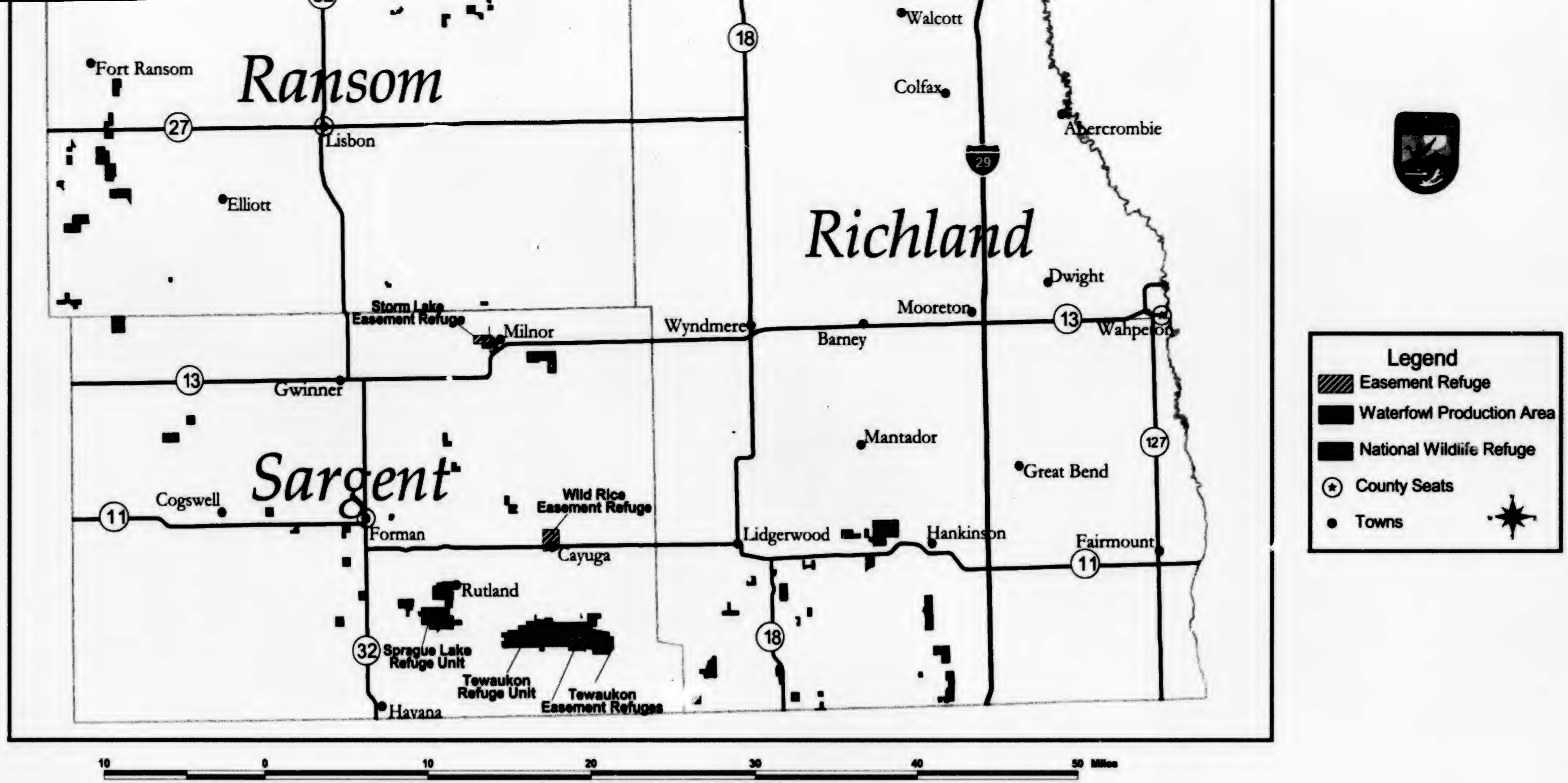
DATE FILMED

6/22/04

Tewaukon National Wildlife Refuge Complex

Ransom, Richland, and Sargent Counties, North Dakota





Map #2 Location of Management Units Within Complex

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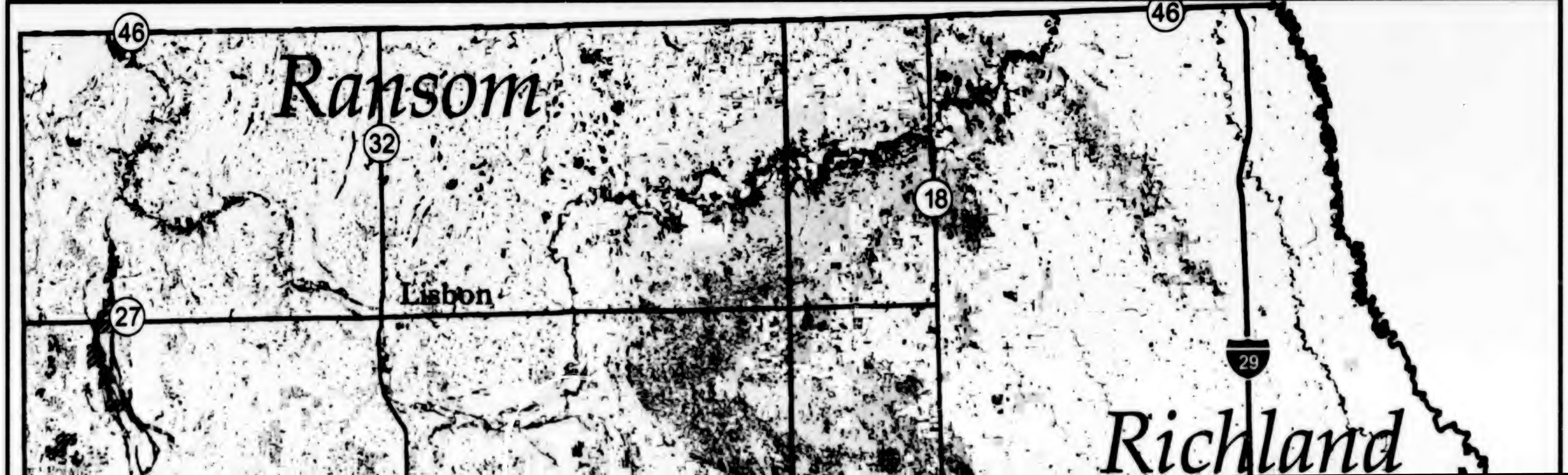
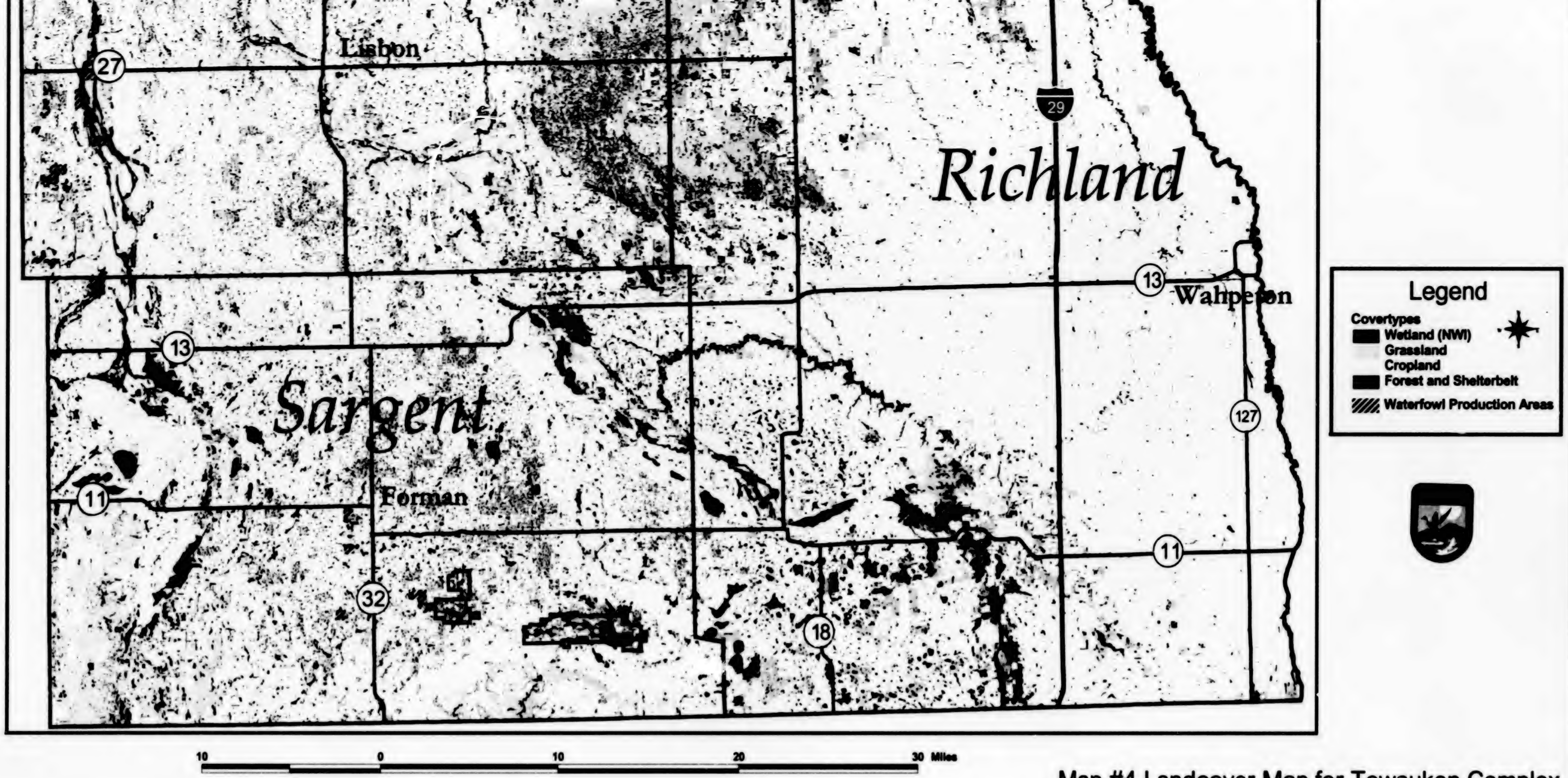
Tewaukon National Wildlife Refuge Complex

Ransom, Richland, and Sargent Counties, North Dakota





Map #4 Landcover Map for Tewaukon Complex

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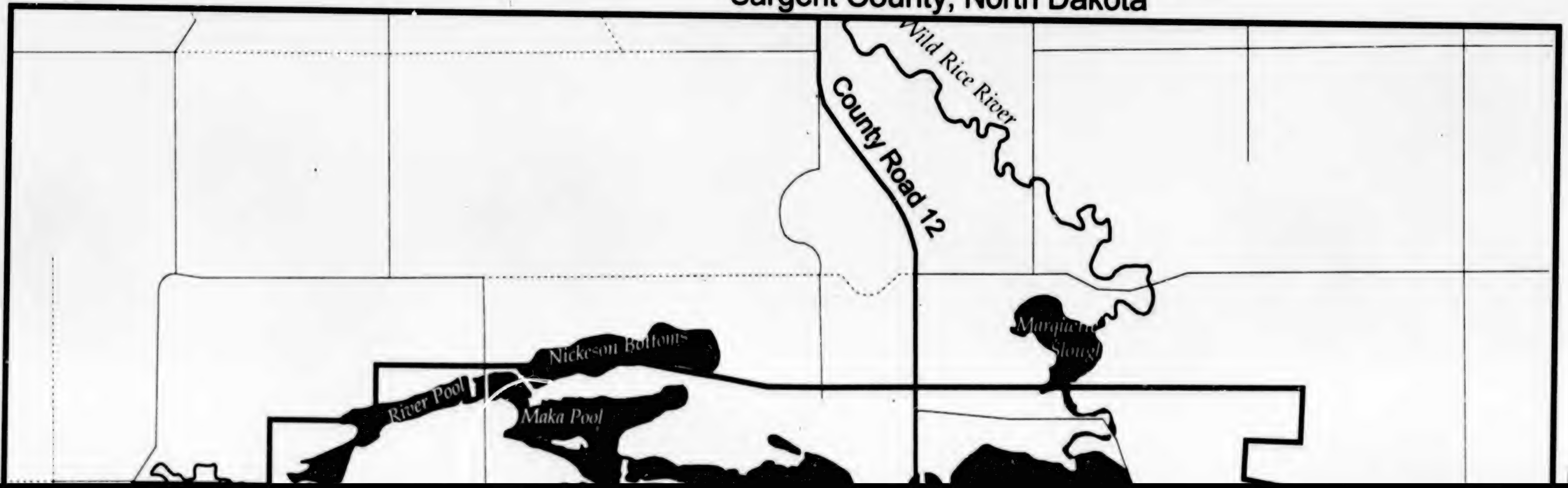
Tewaukon Unit

Sargent County, North Dakota



Map #5 Refuge Map - Tewaukon Unit

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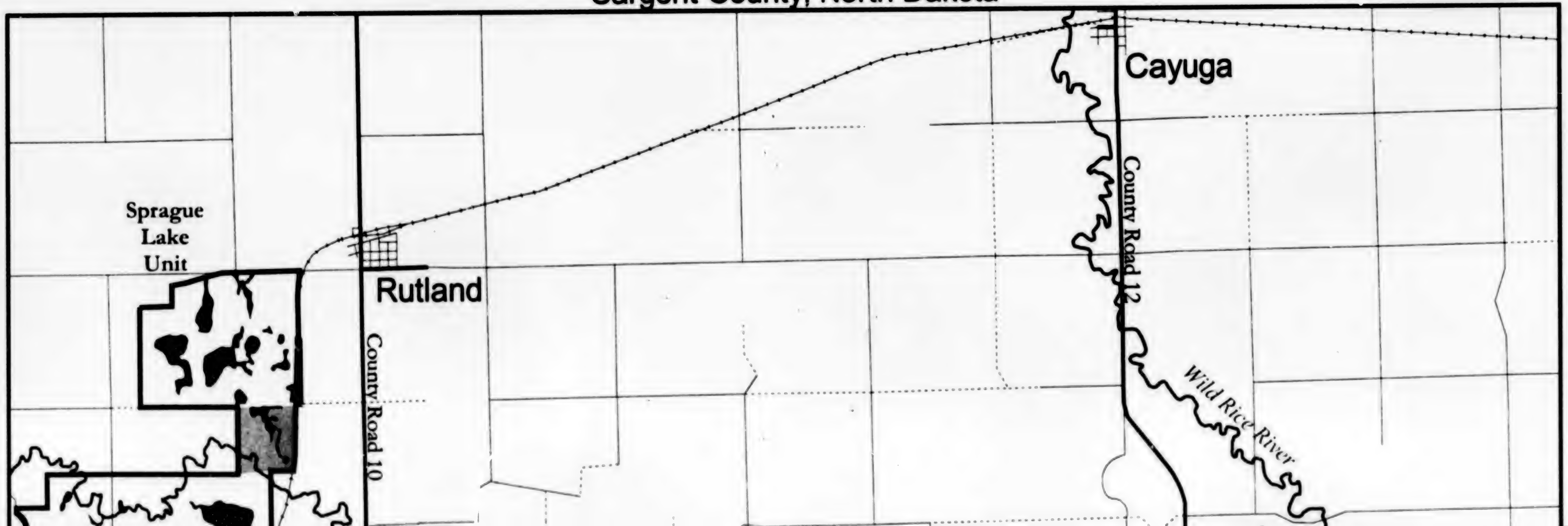
Tewaukon National Wildlife Refuge

Sargent County, North Dakota



Map #7 Six Prairie Focus Areas

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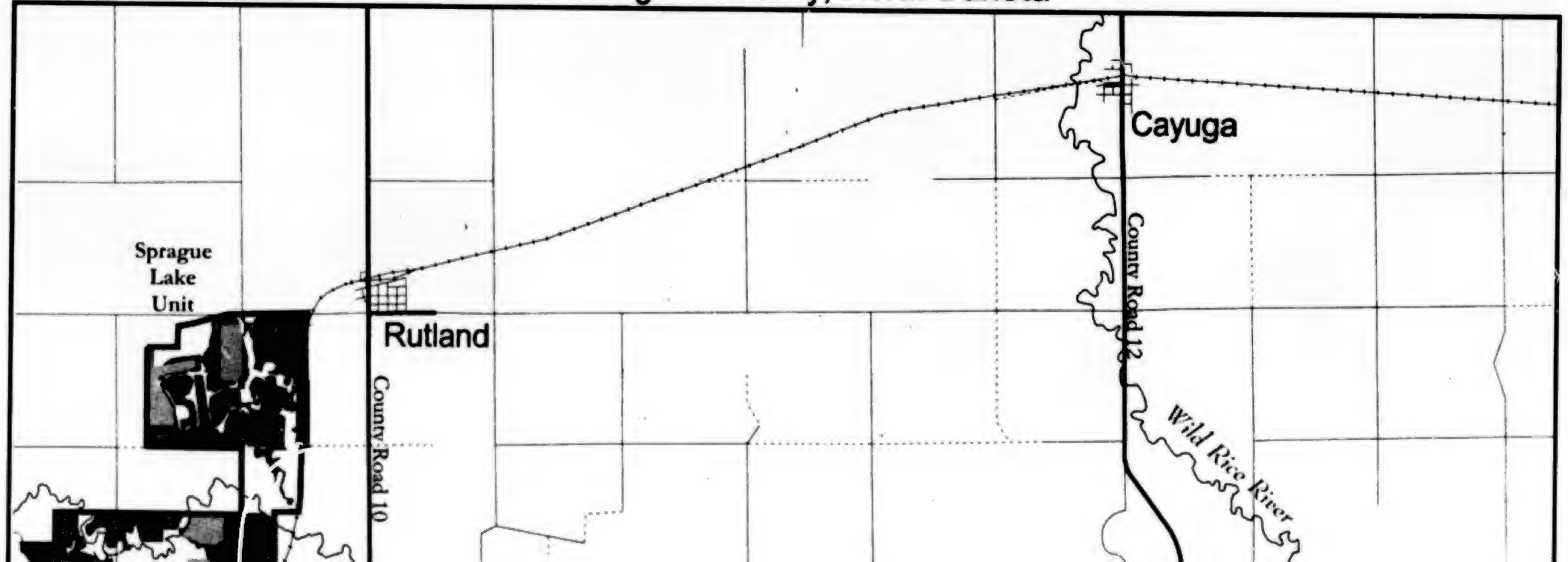
Tewaukon National Wildlife Refuge

Sargent County, North Dakota



Legend

Map #8 Cropland Past and Present

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Tewaukon Unit

Sargent County, North Dakota

Wild Rice River
County Road 12
P
P
P
P
P
Marquette Slough
Nickeson Bottoms
River Pool
Maka Pool
Cutler Marsh
Legend
Closed Area - Closed to All Public Use January 1 - August 30
Krause Waterfowl Production Area (Open to Hunting per State Season)
Nickeson Waterfowl Production Area (Open to Hunting per State Season)
North Dakota Game and Fish Wildlife Management Area
Auto Tour Route

Legend
Closed Area - Closed to All Public Use January 1 - August 30
Krause Waterfowl Production Area (Open to Hunting per State Season)
Nickeson Waterfowl Production Area (Open to Hunting per State Season)
North Dakota Game and Fish Wildlife Management Area
Auto Tour Route (Open May 1 through September 30)
Boat Ramp
Fishing Access Dock - Bank Fishing Open Year Round
Refuge Headquarters
P General Parking Area
Rest Room
Universally Accessible
Picnic Area
Overlook
Please Consult Refuge Public Use Regulations for Specific Guidelines
Nickeson Bottoms
Marquette Slough
River Pool
Maka Pool
Cutler Marsh
Wild Rice River
Hepi Lake
Pool 7A
West White Lake
East White Lake
Lake Tewaukon
Parkers Bay
County Road 5
Unnamed Tributary
LaBelle Creek
N
W
E
S
1
0
1
2 Miles

Map #9 Public Use Tewaukon Unit
(May-August)

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Tewaukon Unit

Sargent County, North Dakota

Wild Rice River
County Road 12
P
Marquette Slough
Nickeson Bottoms
River Pool
Maka Pool
Cutler Marsh
Legend
▥ Public Use Area - Open to Archery in September, Special Permit Deer Hunting in November, and Pheasant Hunting in December
☐ No Hunting Area
▨ Waterfowl Production Area (Open to Hunting per State Season)
▤ North Dakota Game and Fish Wildlife Management Area
Auto Tour Route (Closed October 1 through April 30)

Map #11 Public Use Tewaukon Unit
(September-April)

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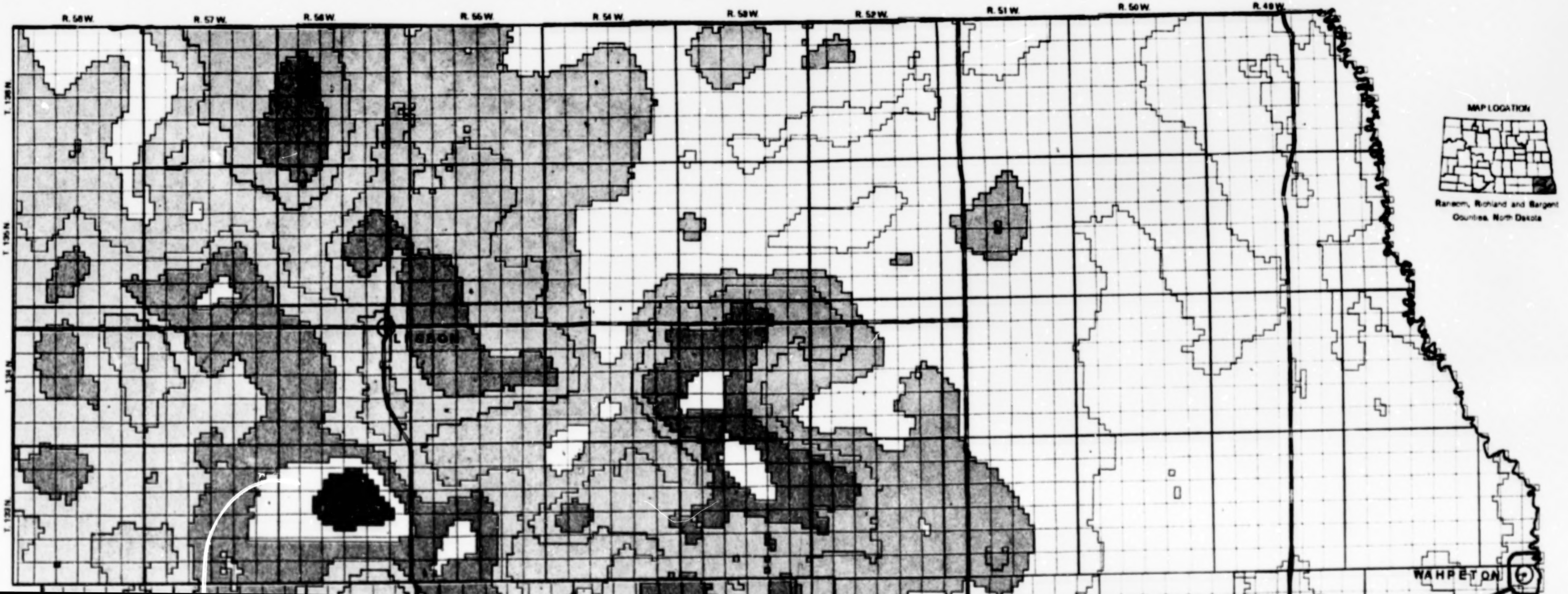
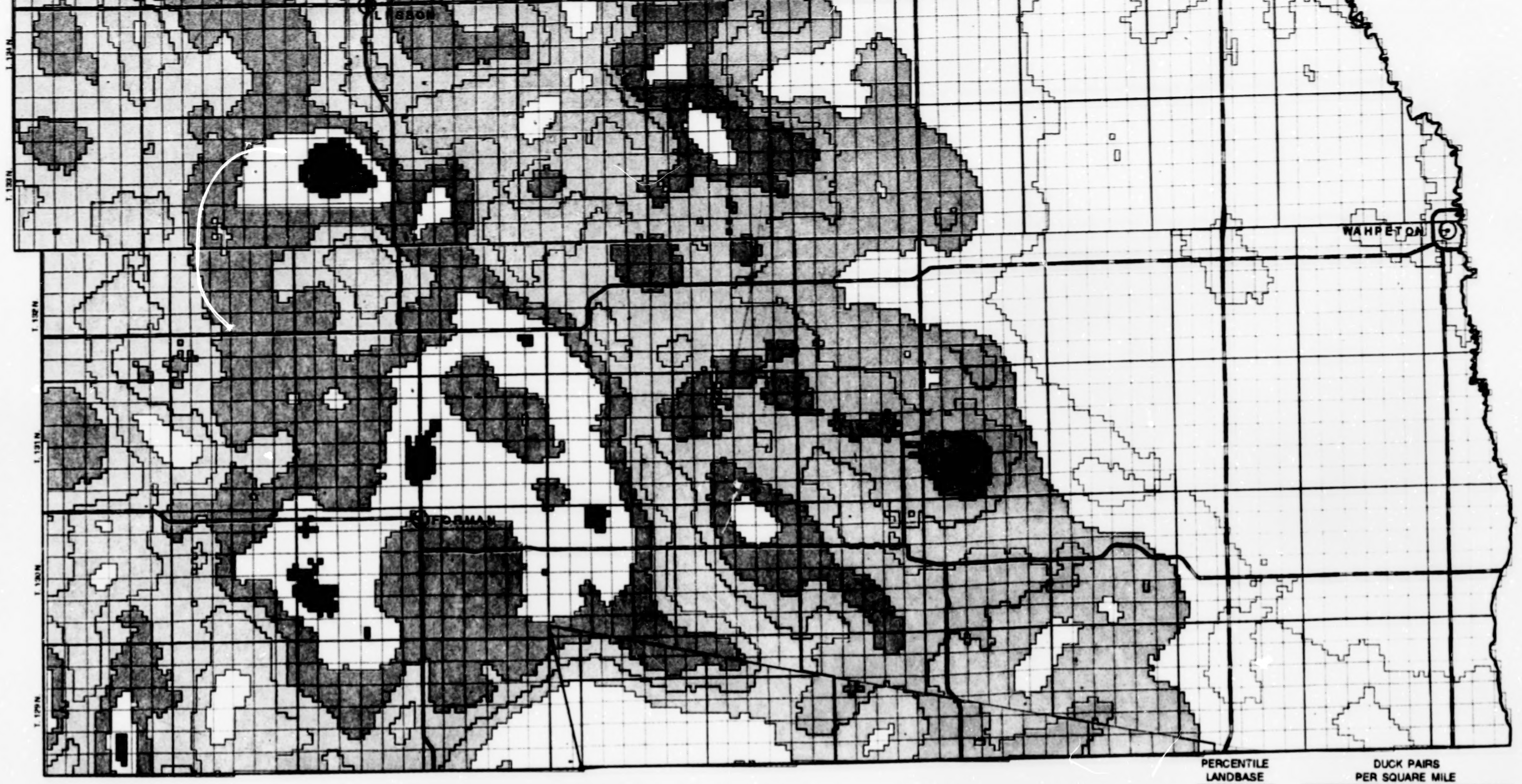
Waterfowl Breeding Pair Distributions

Tewaukon Wetland Management District, North Dakota





Waterfowl pair density information was generated using GIS modeling techniques utilizing USFWS National Wetland Inventory digital data, the USFWS-Region 6 Four Square Mile Survey results, and regression equations predicting duck pair/wetland relationships developed by the USFWS Habitat and Population Evaluation Team and USGS Northern Prairie Wildlife Research Center. The information presented represents the accessibility of 37 58 acre landscape units to the combined predicted breeding pairs for mallard, blue-winged teal, gadwall, pintail, and shoveler. For more information contact the HAPET Office, USFWS, Bismarck, North Dakota.

This map was prepared in September 2000.

SCALE = 1 : 165000

0 5 10

miles

Projection : Universal Transverse Mercator, Zone 14

	PERCENTILE LANDBASE	DUCK PAIRS PER SQUARE MILE range			DUCK PAIRS PER SQUARE MILE mean
■	99 5	97	-	117	102
□	95	80	-	97	87
■	80	54	-	79	64
▨	60	37	-	53	44
▨	40	19	-	36	28
□	20	6	-	18	10
□	0	0	-	5	3

Map #13 Potential Waterfowl Pair Densities.

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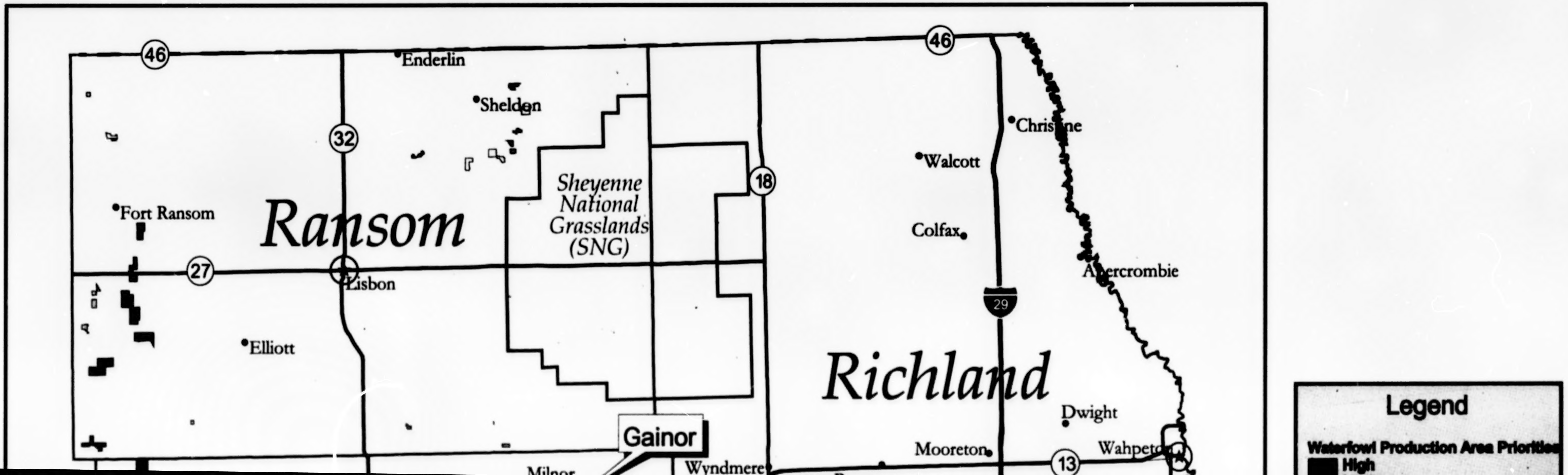
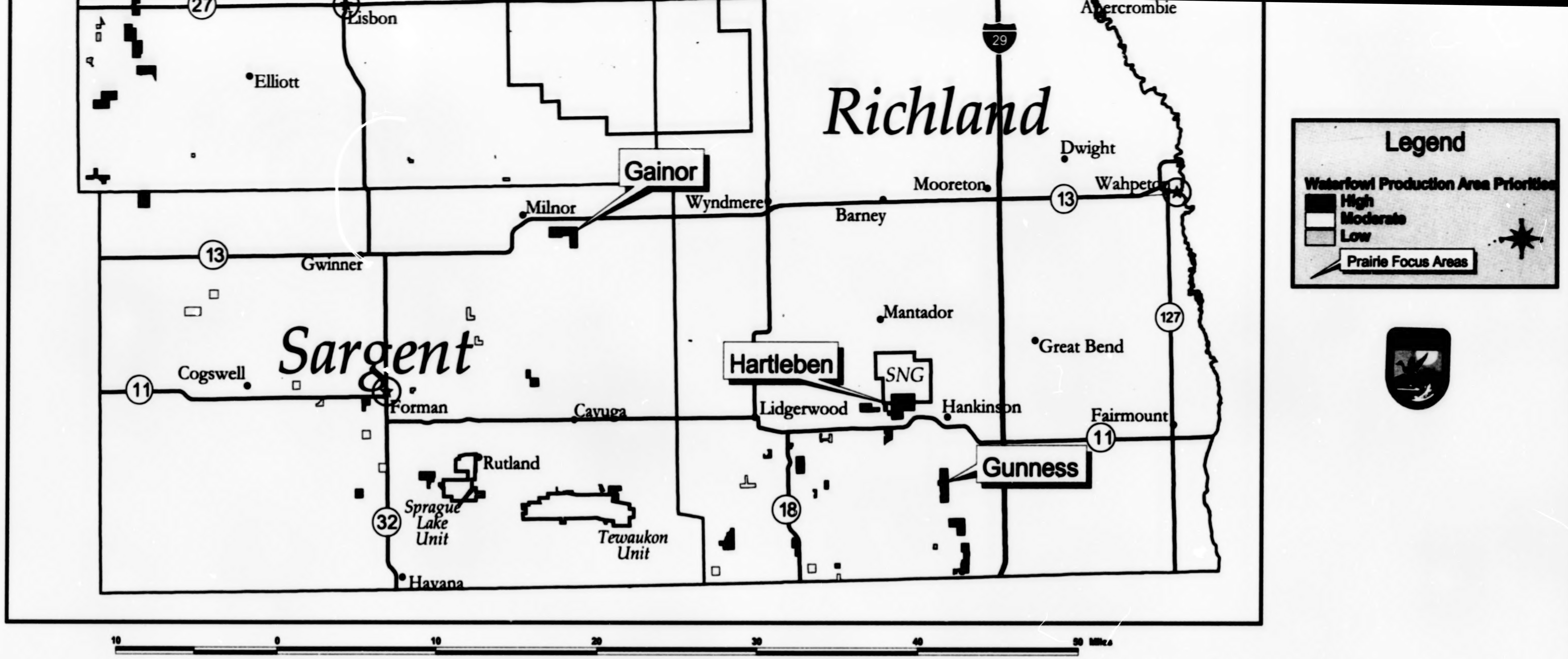
Tewaukon Wetland Management District

Ransom, Richland, and Sargent Counties, North Dakota





Map #14 Waterfowl Production Area Priorities

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